

FIG. 1A

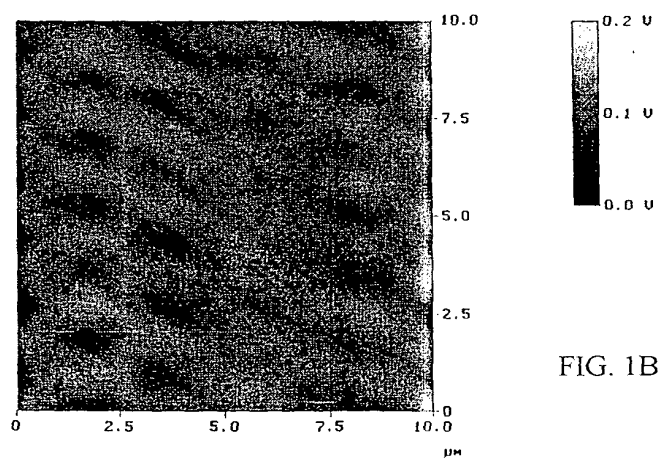


FIG. 1B

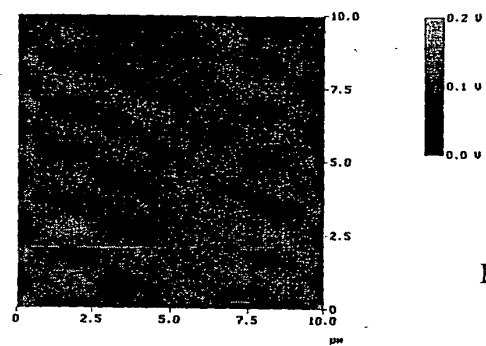


FIG. 2A

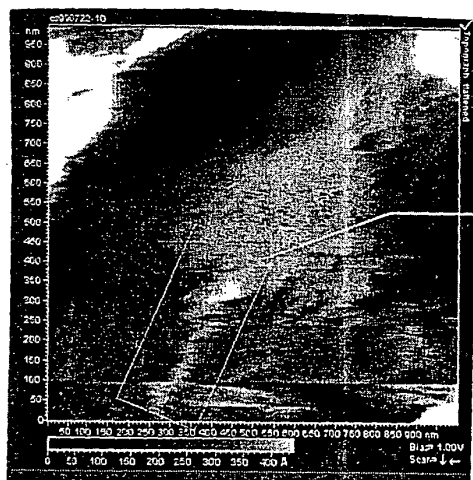


FIG. 2B

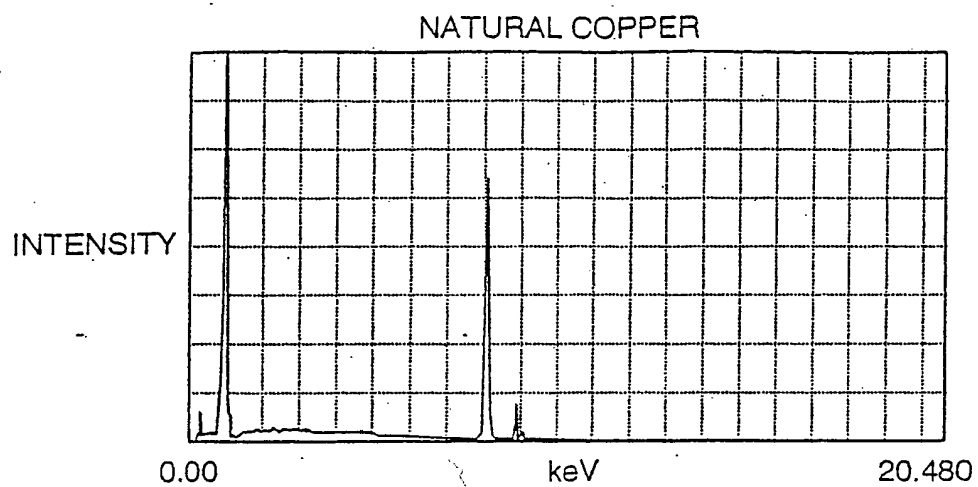


FIG. 3A

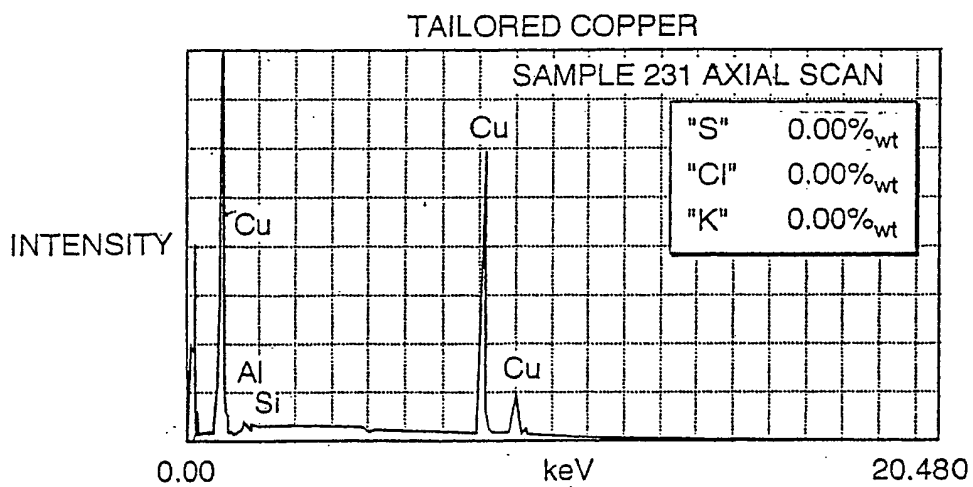


FIG. 3B

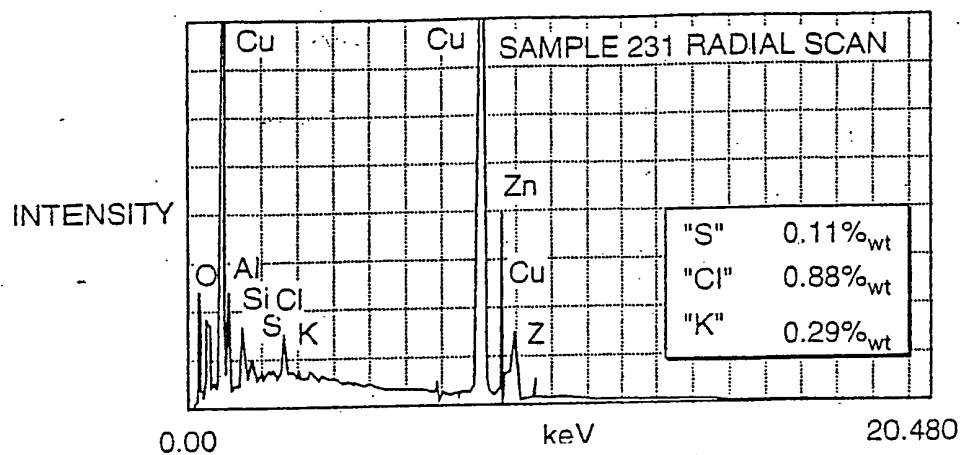


FIG. 4A

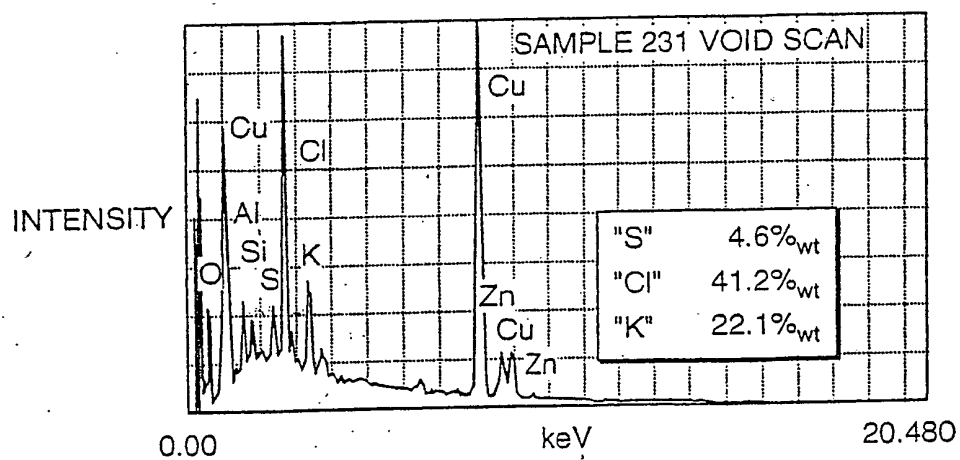


FIG. 4B

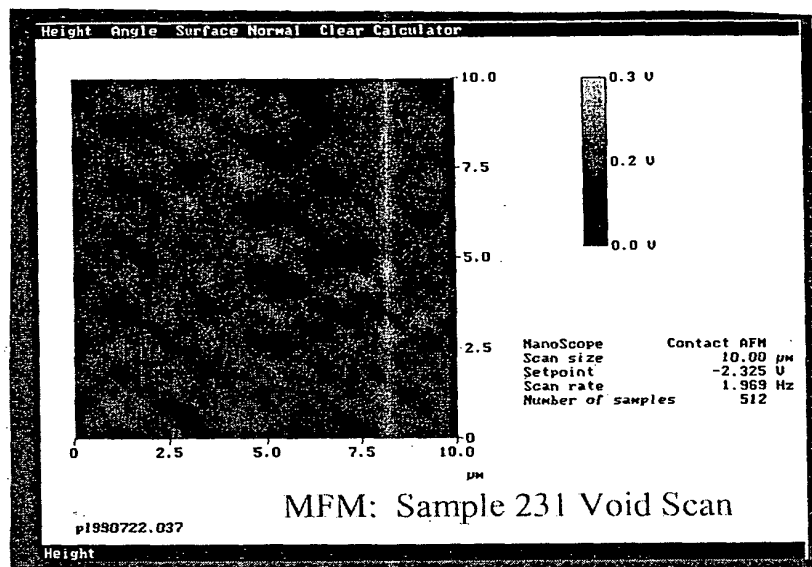


FIG. 5A

# TAILORED COPPER

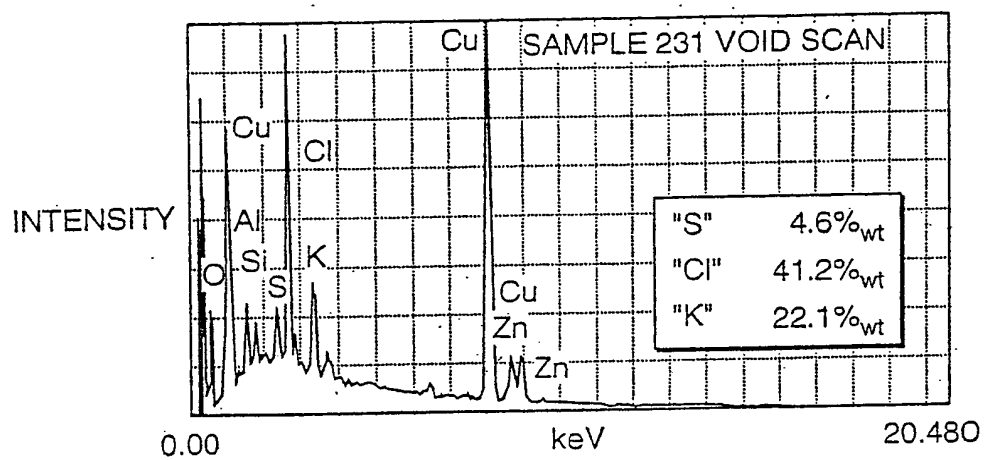


FIG. 5B

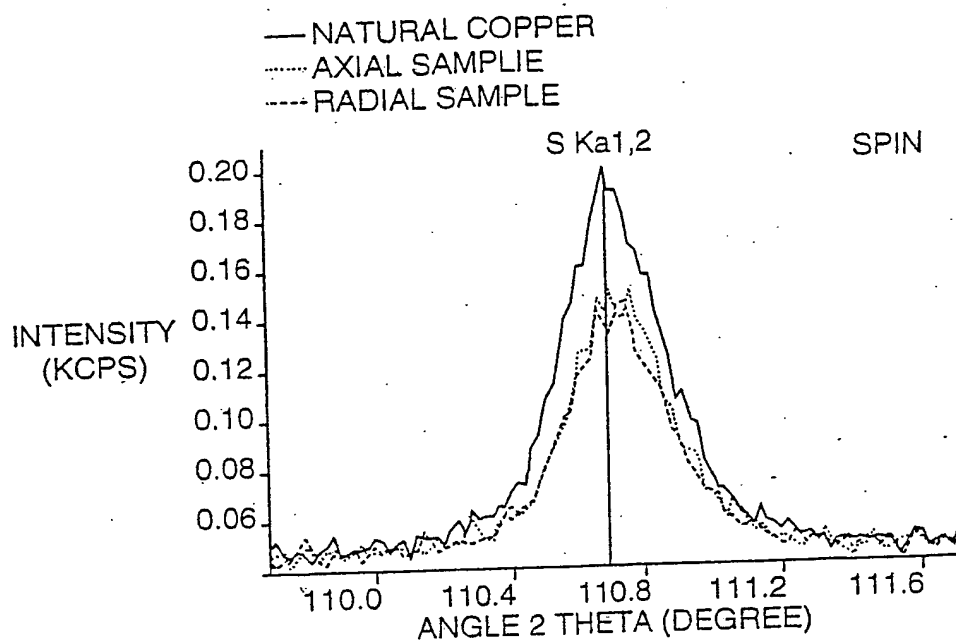


FIG. 6A

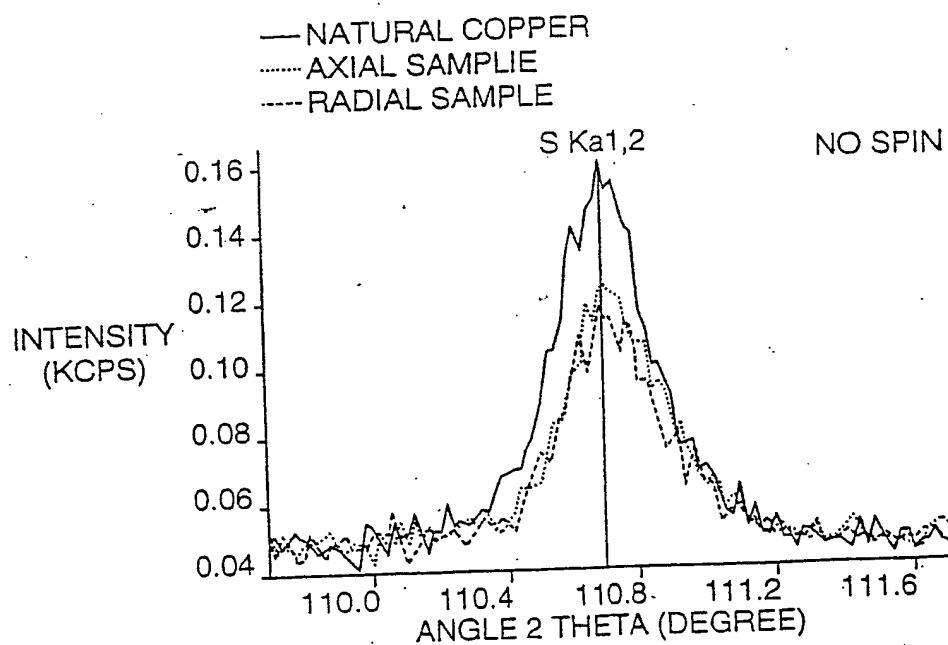
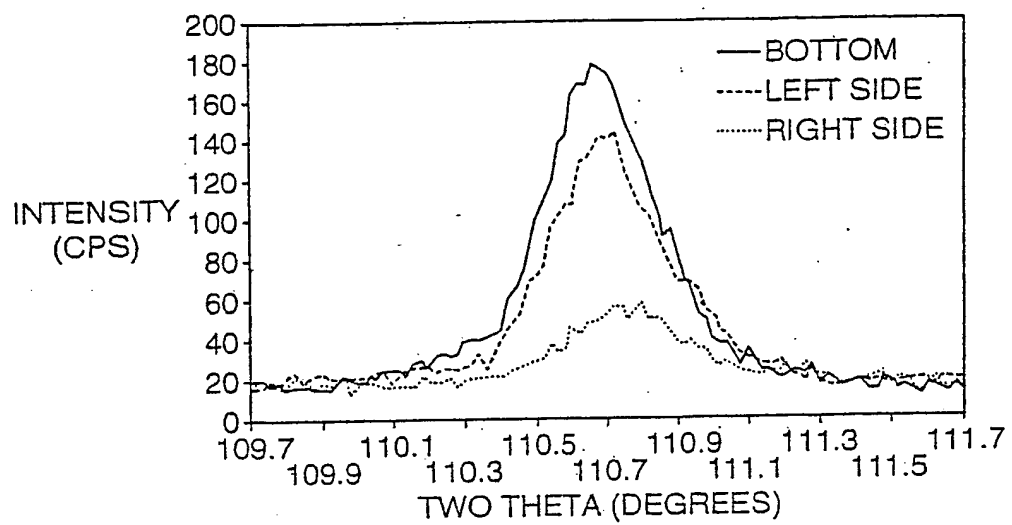


FIG. 6B



XRF ANALYSIS

FIG. 7



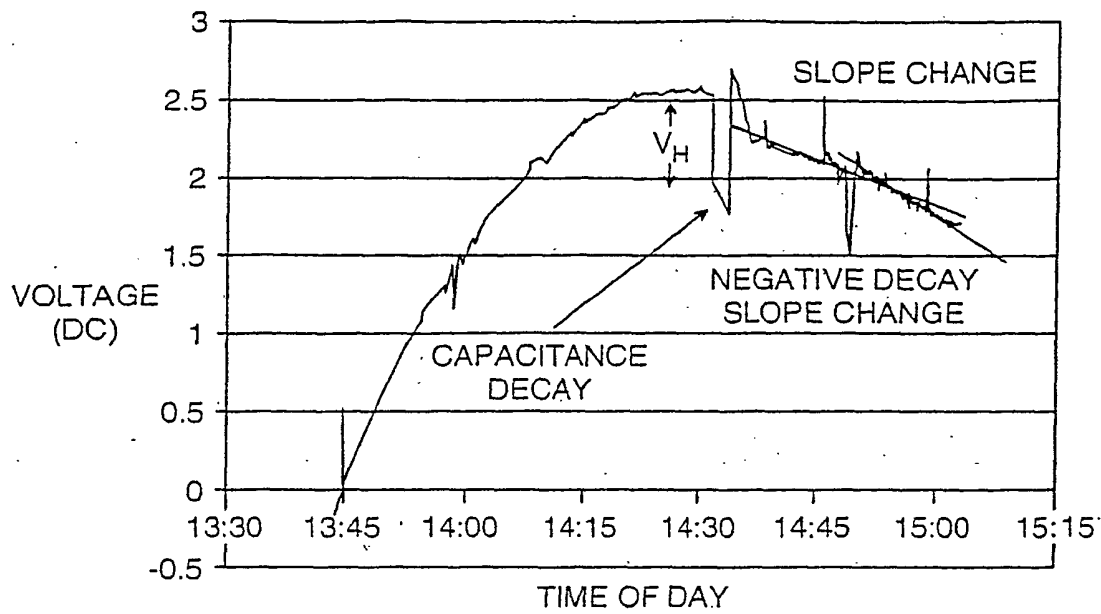


FIG. 8

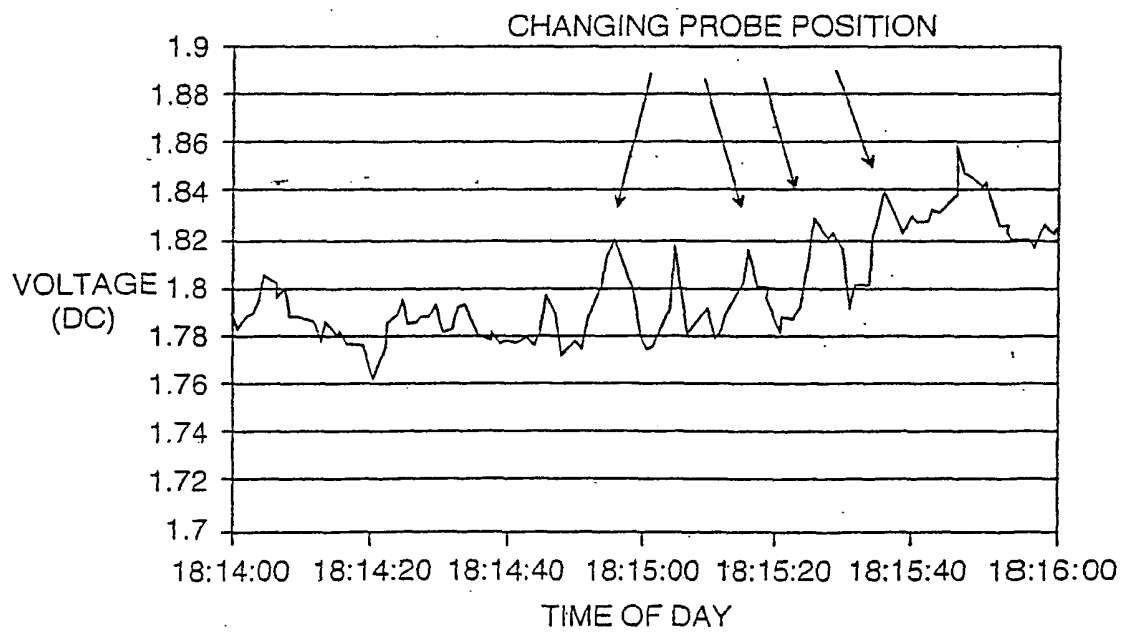


FIG. 9

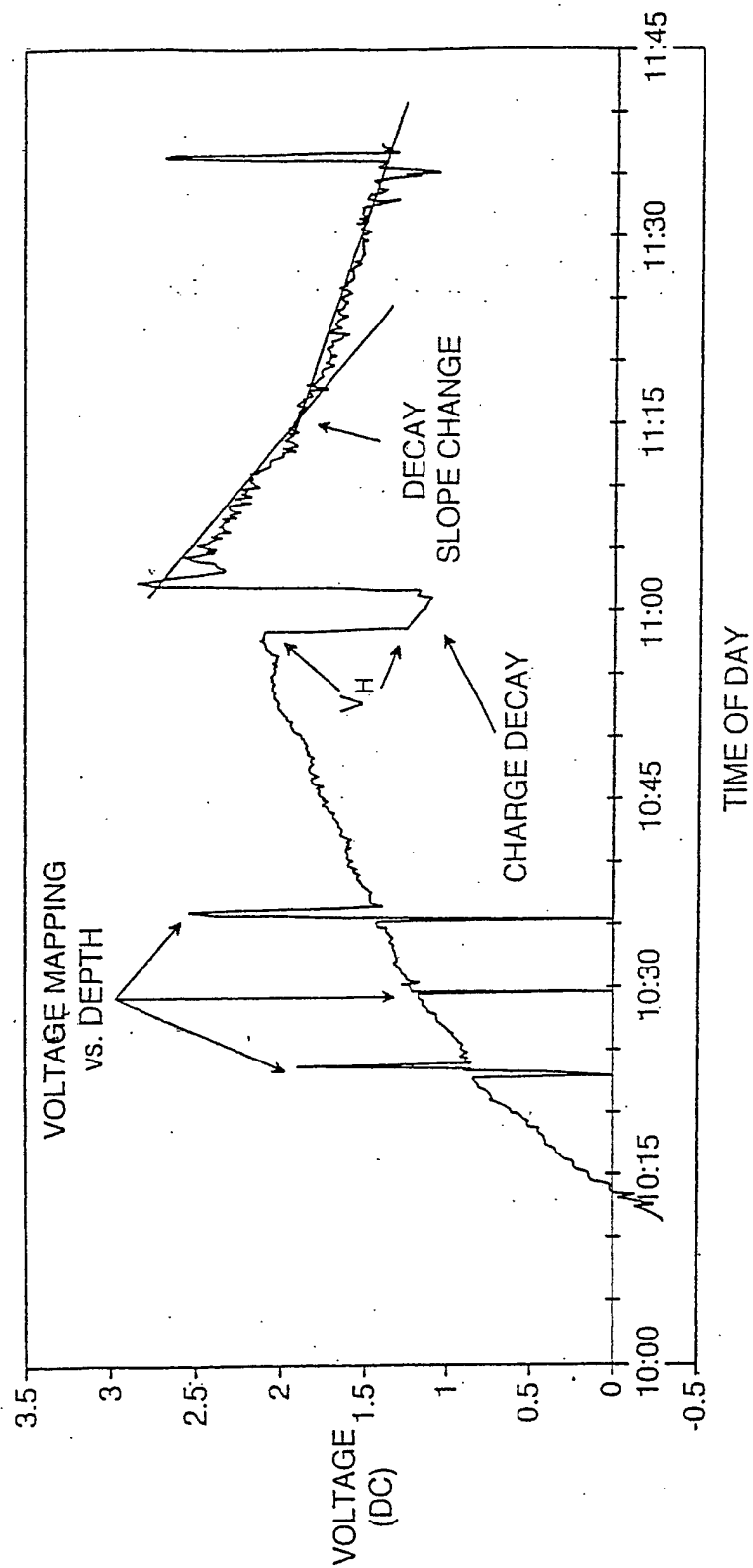


FIG. 10

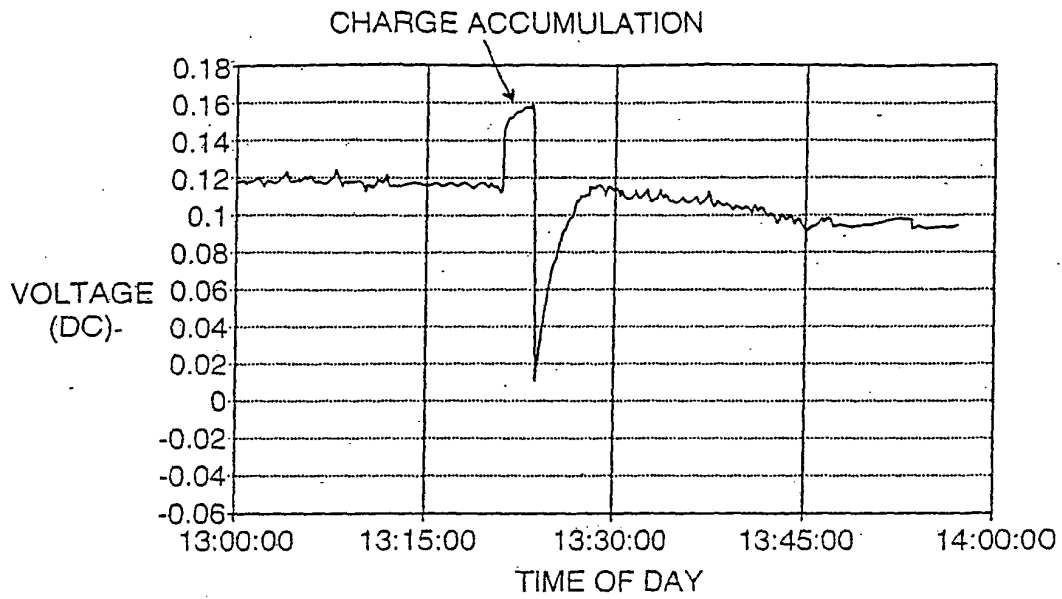


FIG. 11

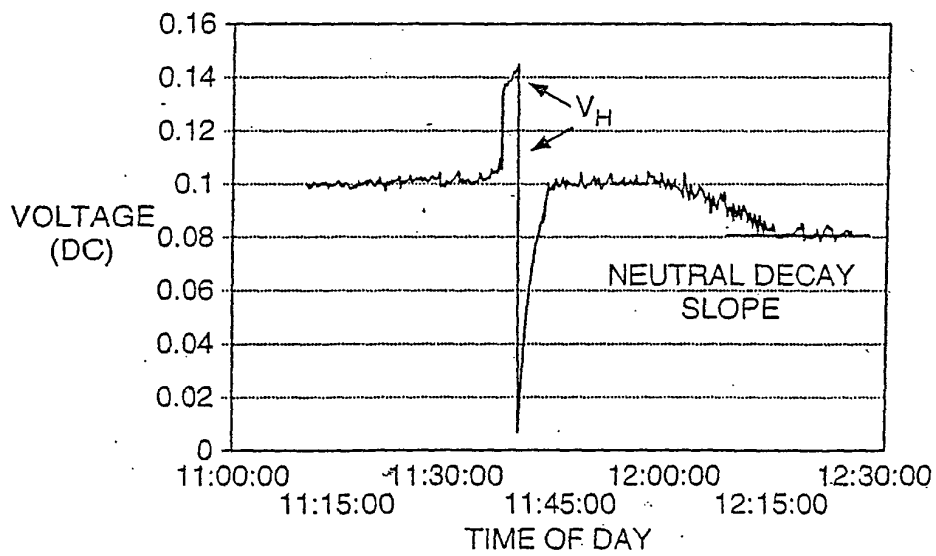


FIG. 12

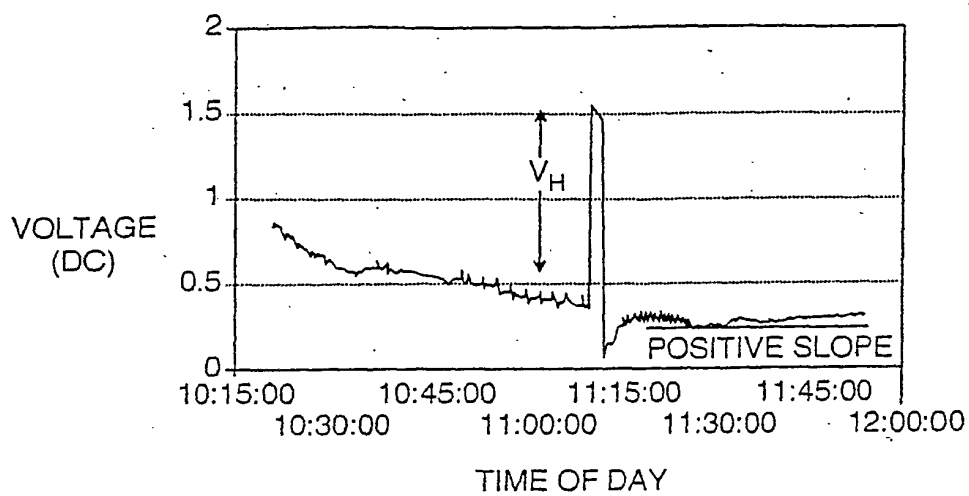


FIG. 13

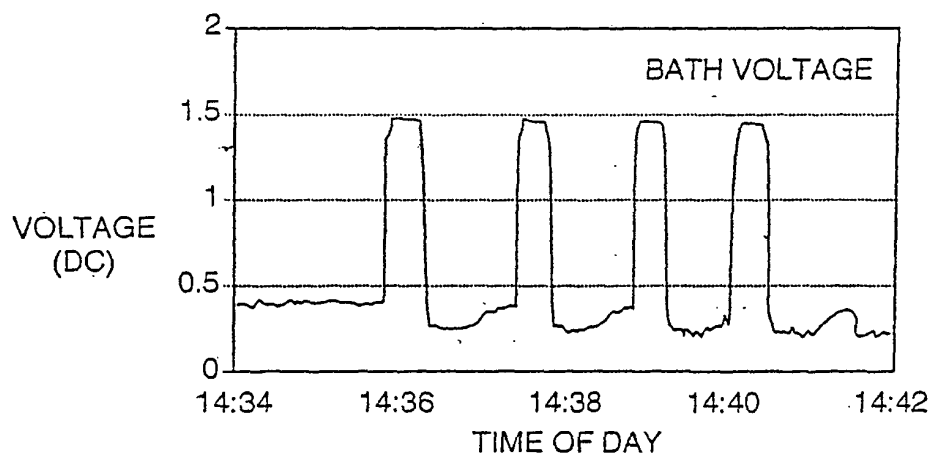


FIG. 14

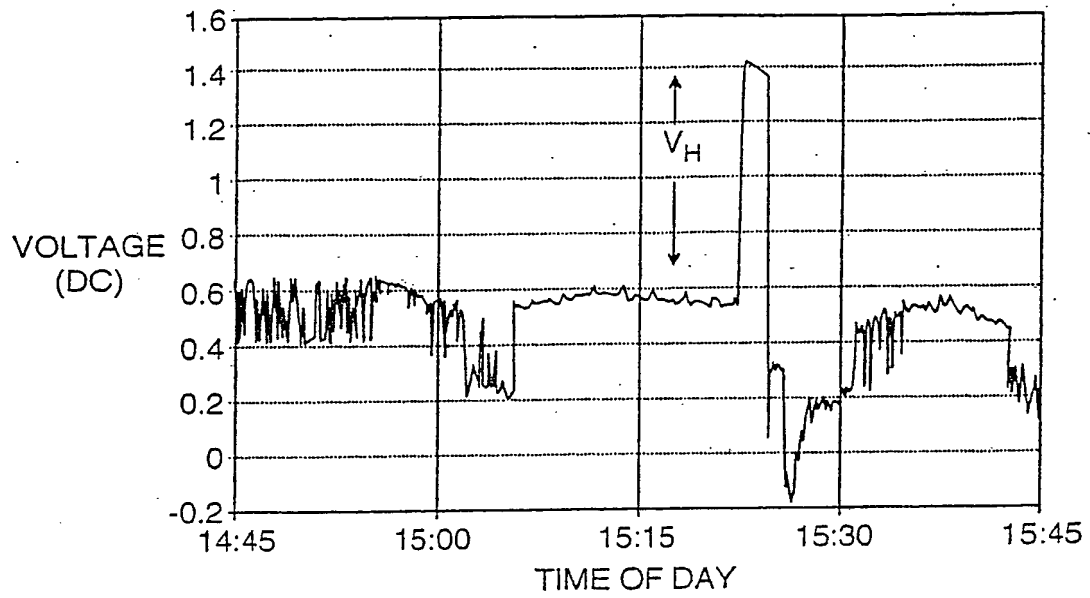


FIG. 15

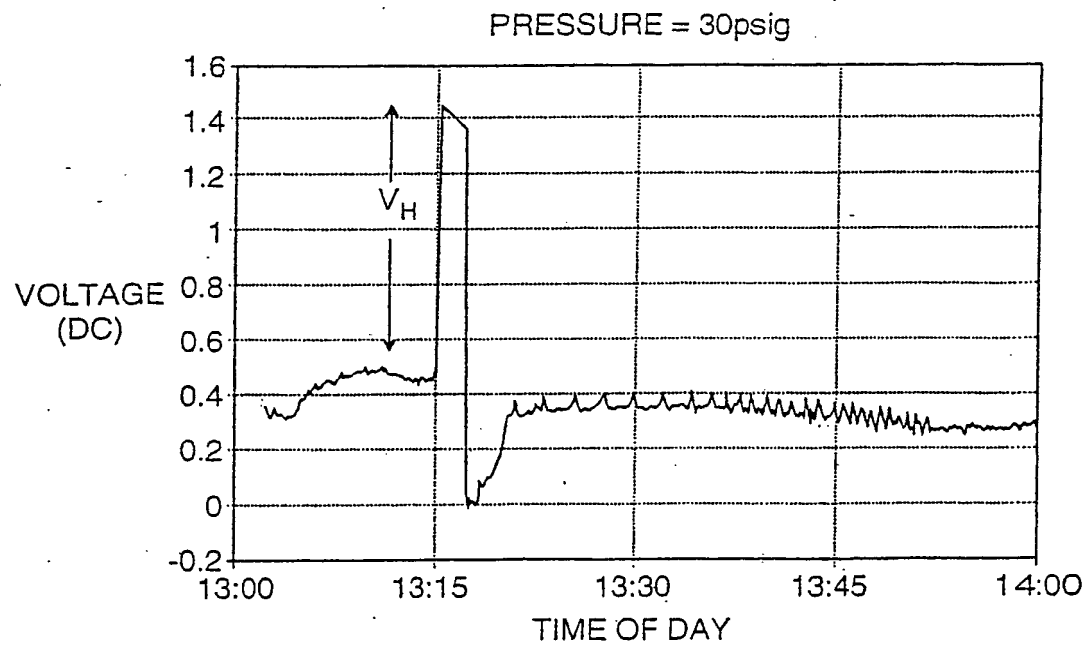


FIG. 16



FIG. 17A

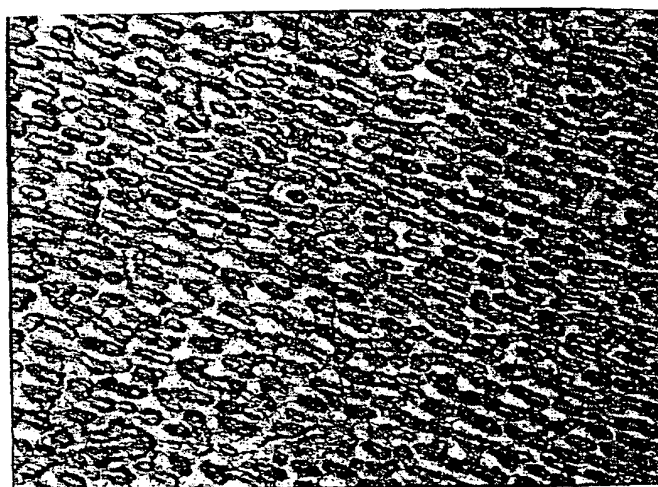


FIG. 17B

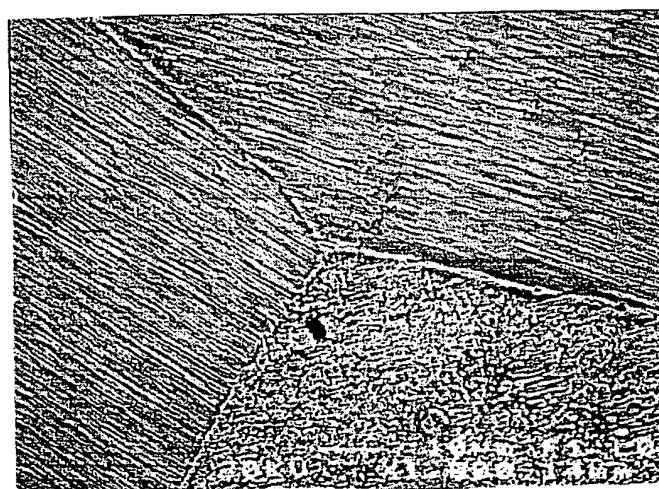


FIG. 17C

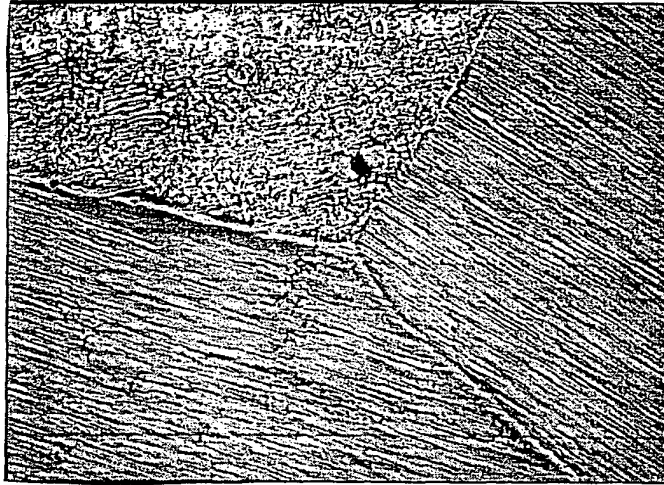


FIG. 18A

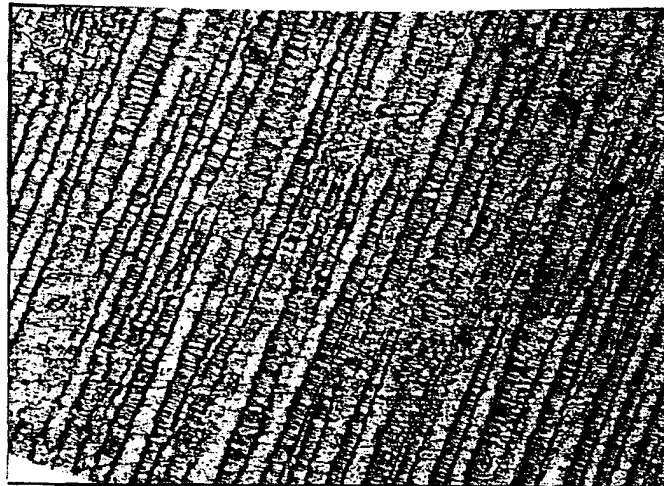


FIG. 18B

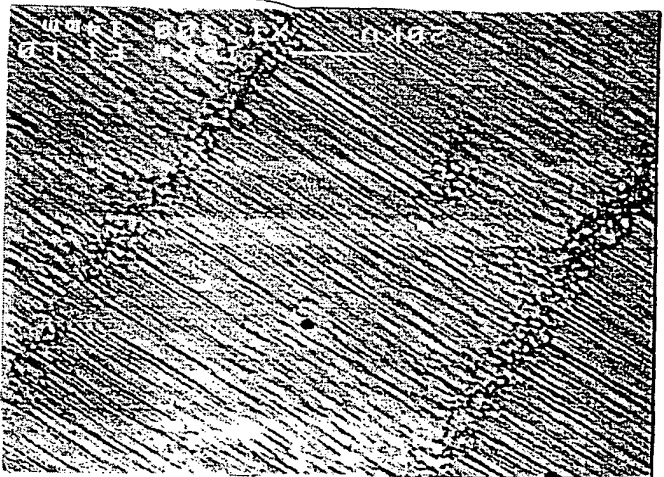


FIG. 18C

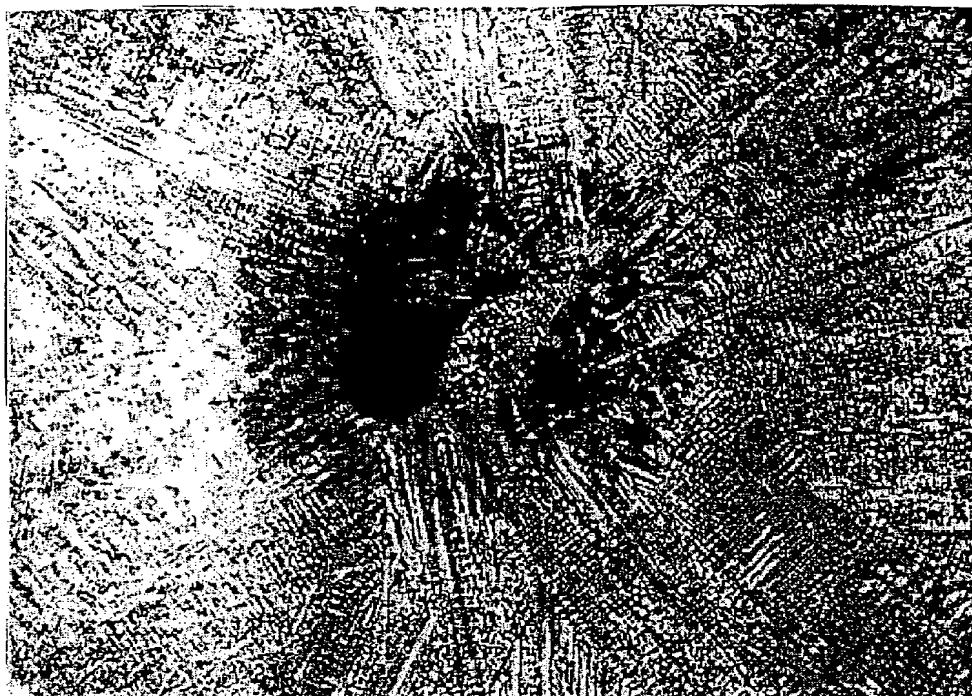


FIG. 19A

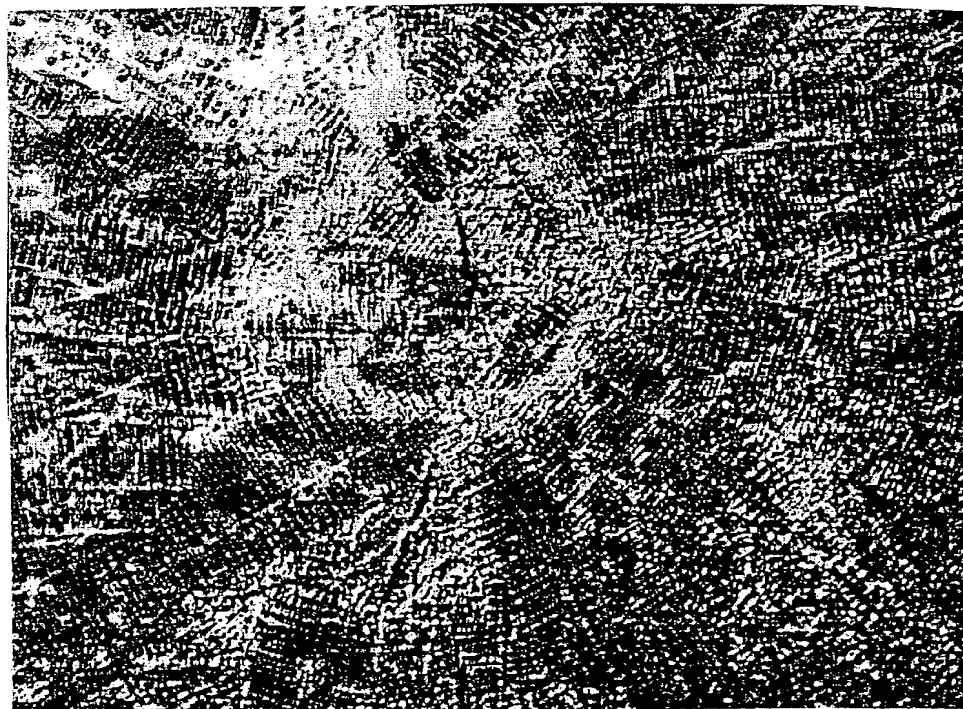


FIG. 19B



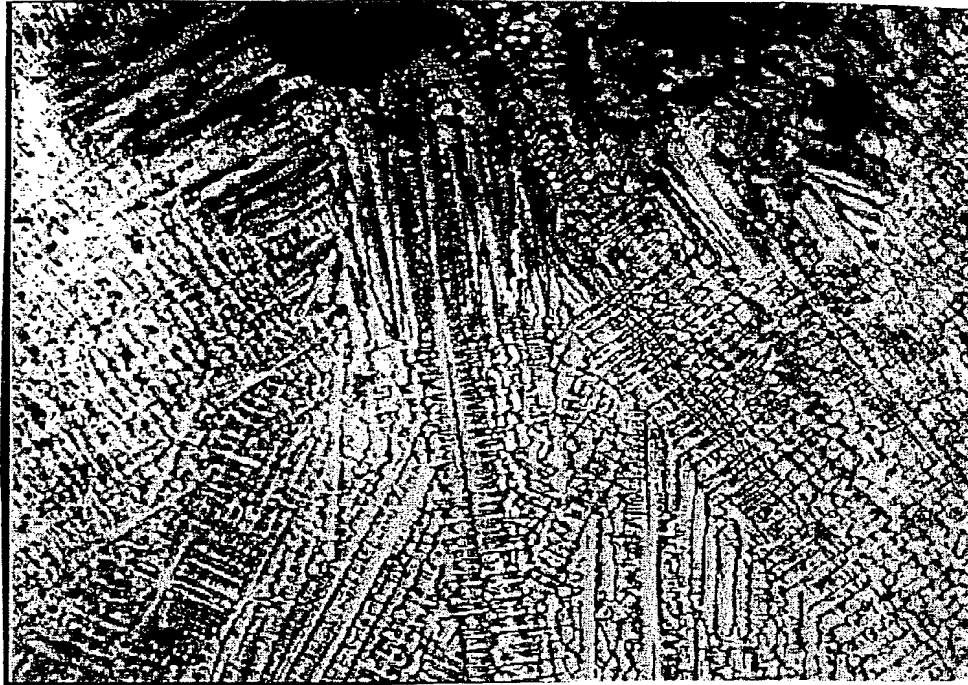


FIG. 20A



FIG. 20B

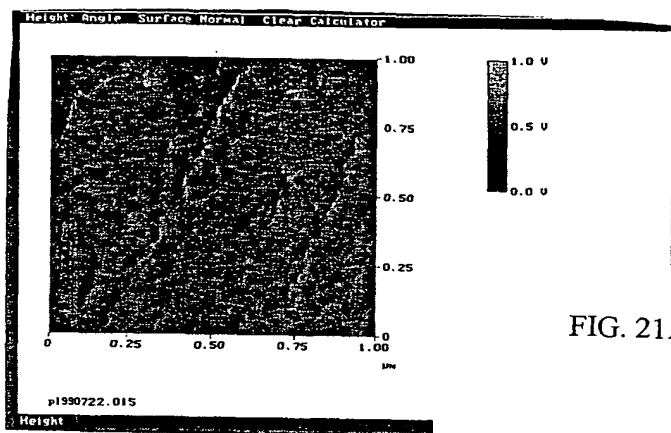


FIG. 21A

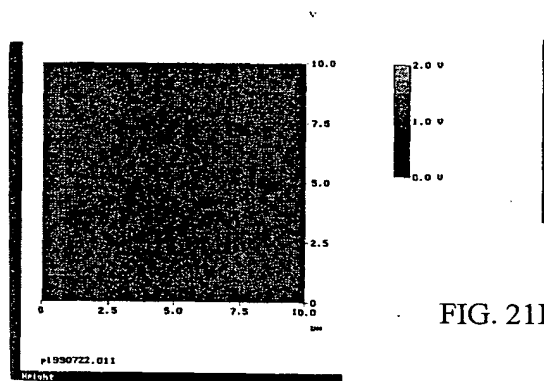


FIG. 21B

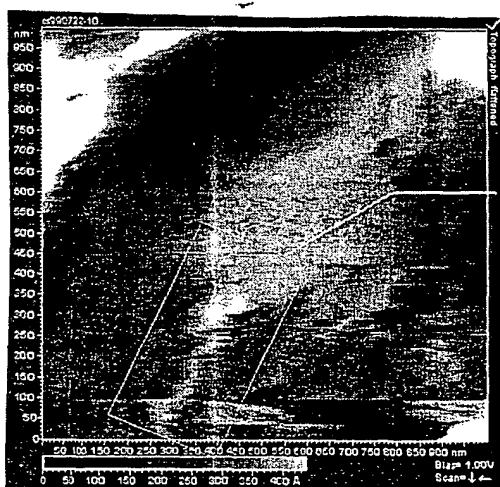


FIG. 21C

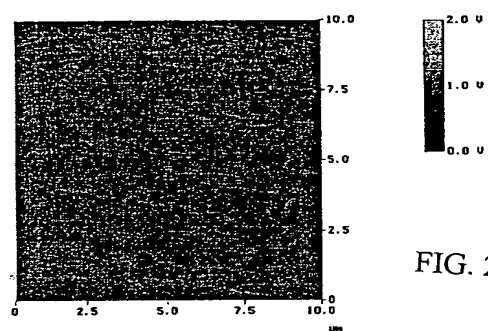


FIG. 22A

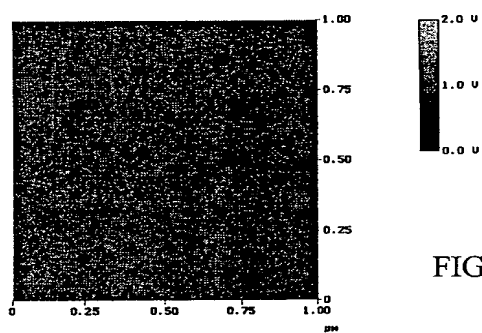


FIG. 22B

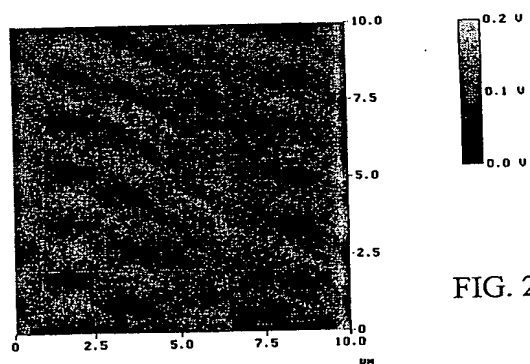


FIG. 22C

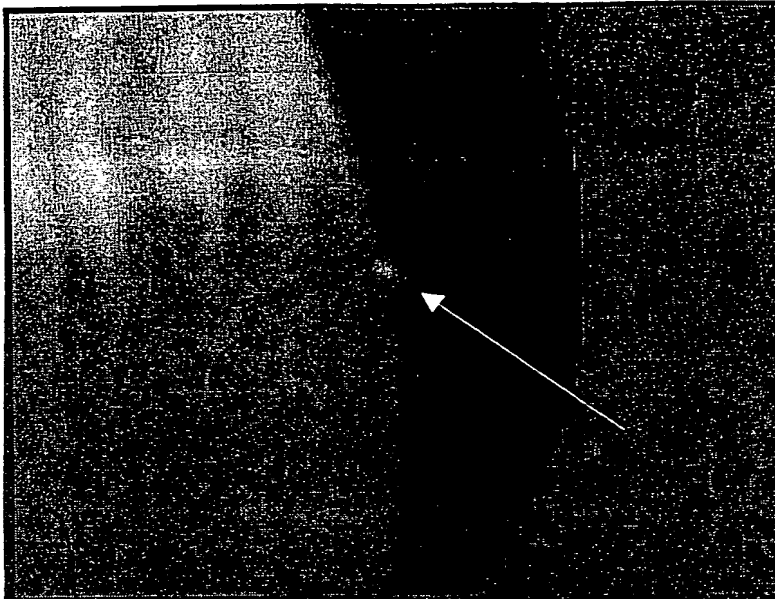


FIG. 23A



FIG. 23B

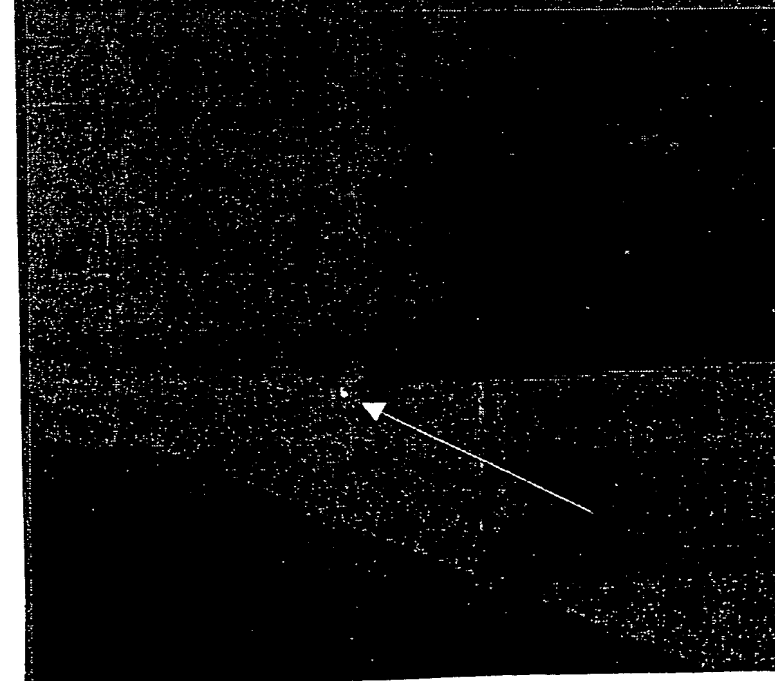


FIG. 23C

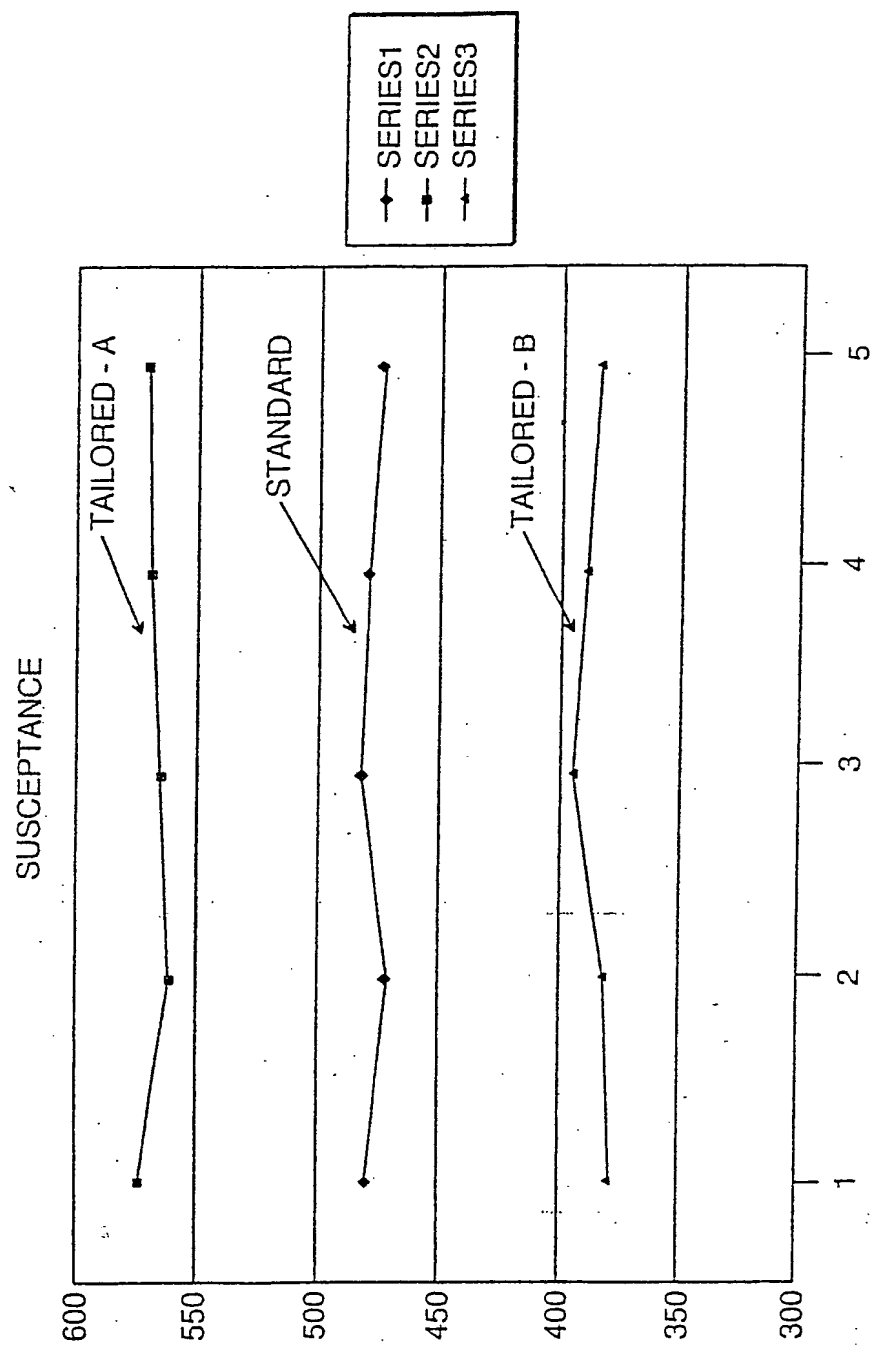


FIG. 24

14-01-01 scans for Copper (LiF220/FPC)

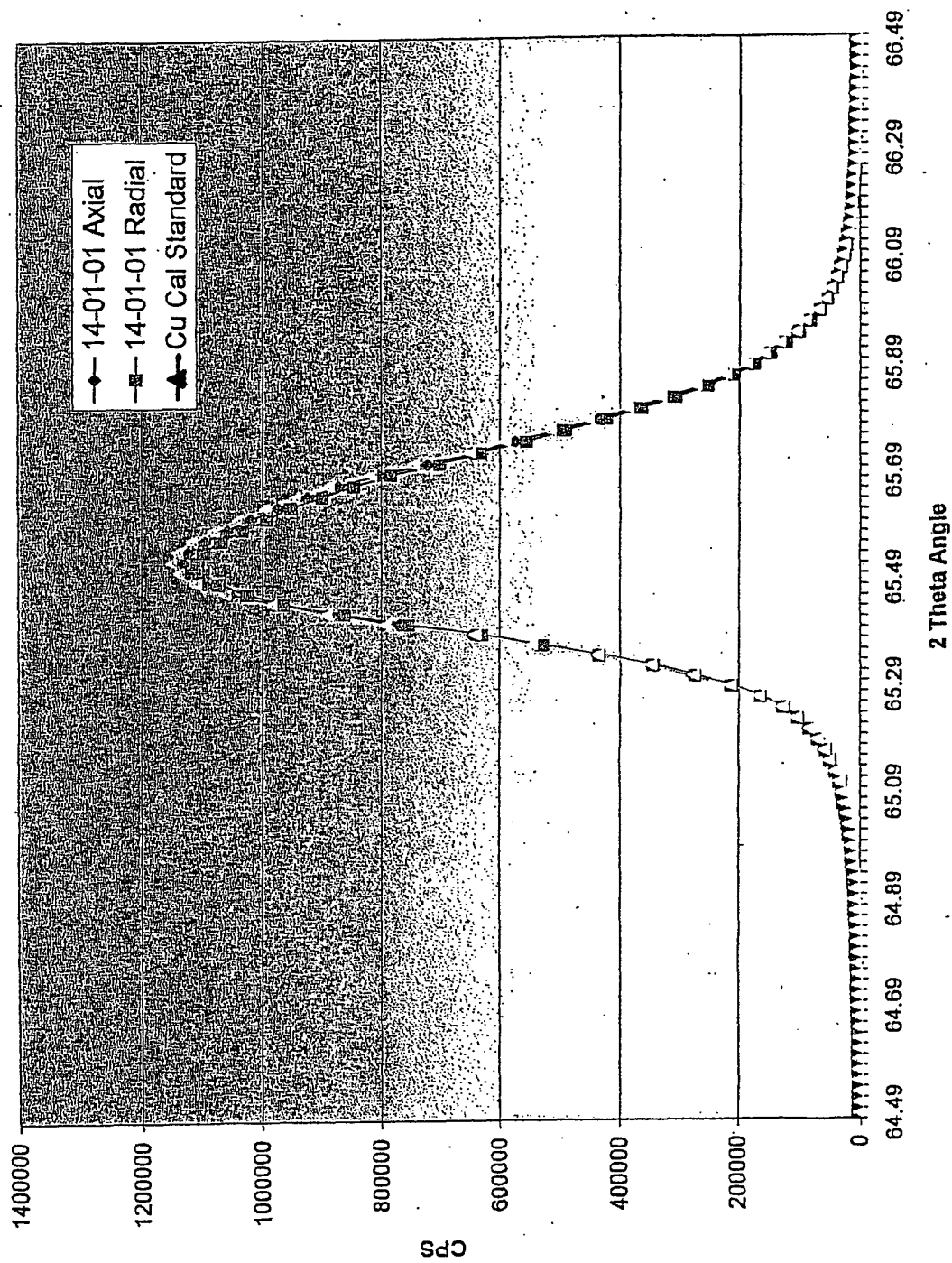


FIG. 25

Al in Copper 14-01-01

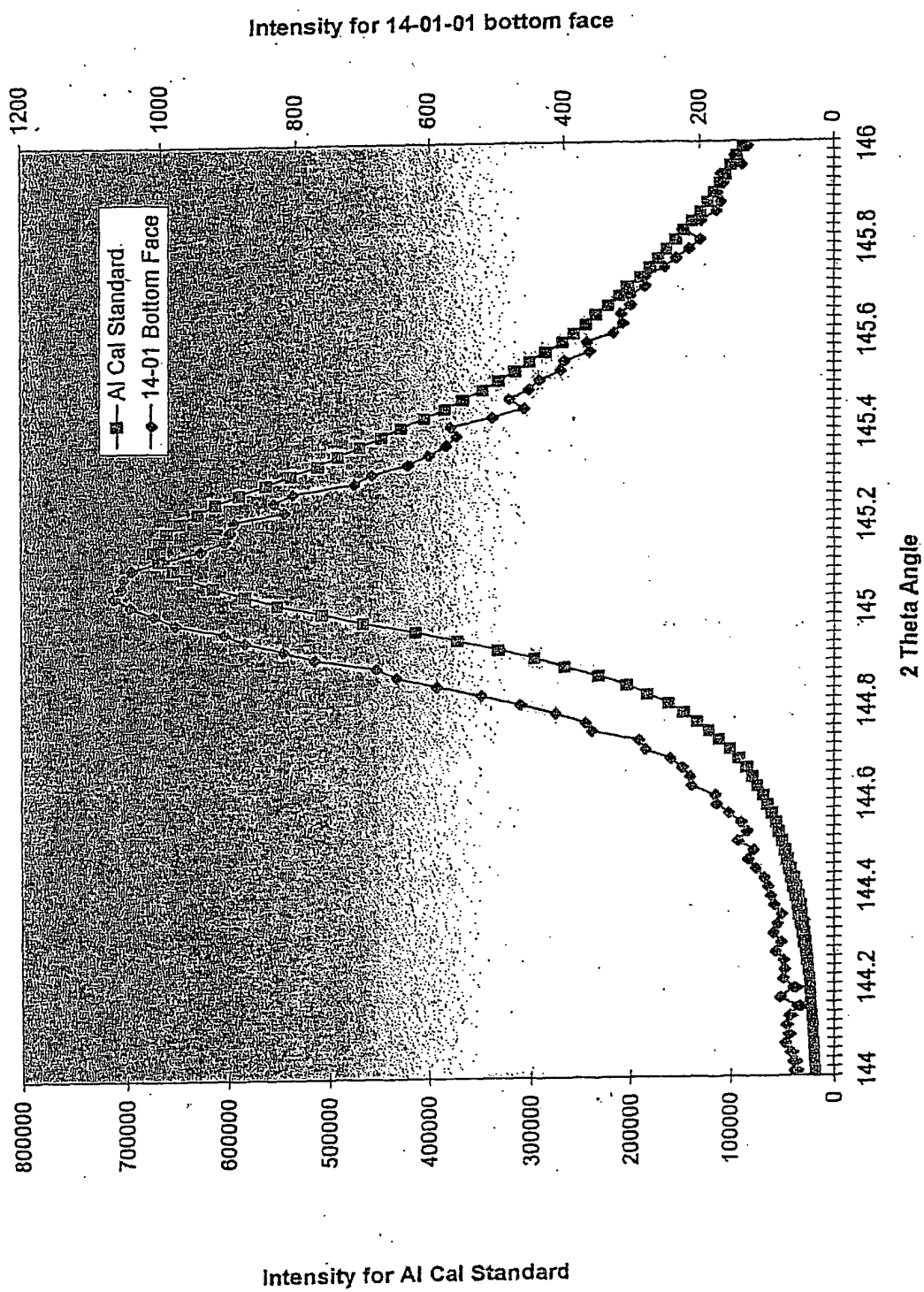
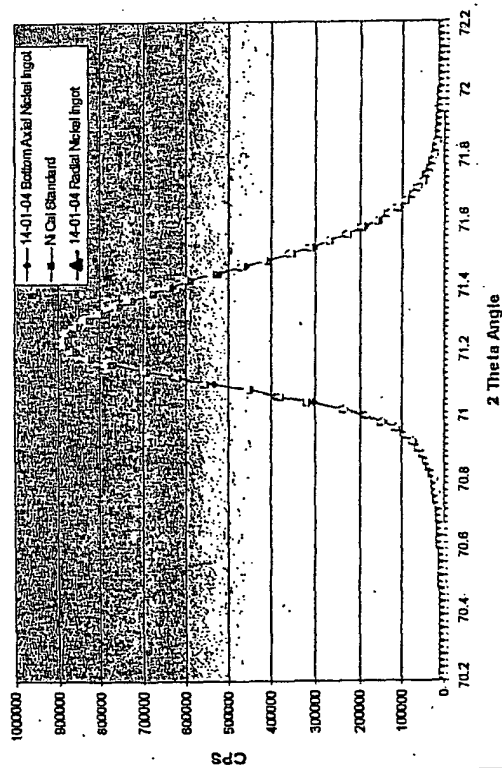


FIG. 26

# Nickel Scans: Nickel Analysis



K<sub>α</sub> Nickel Scans  
Run 14-01-04

FIG. 27A

L<sub>α</sub> Nickel Scans  
Run 14-01-04

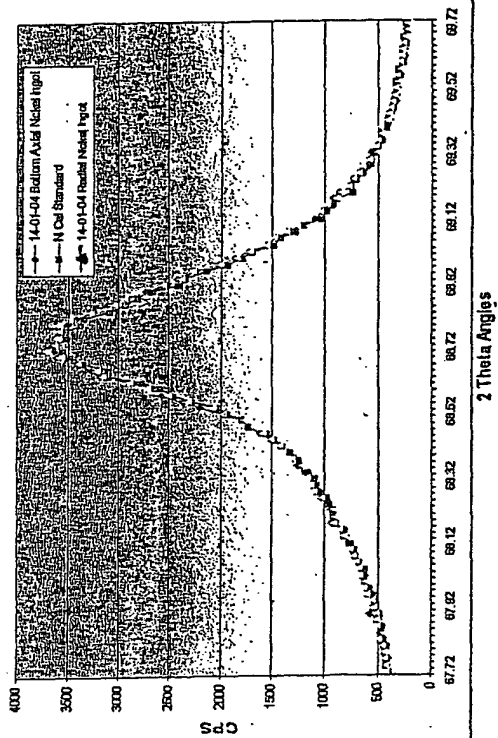
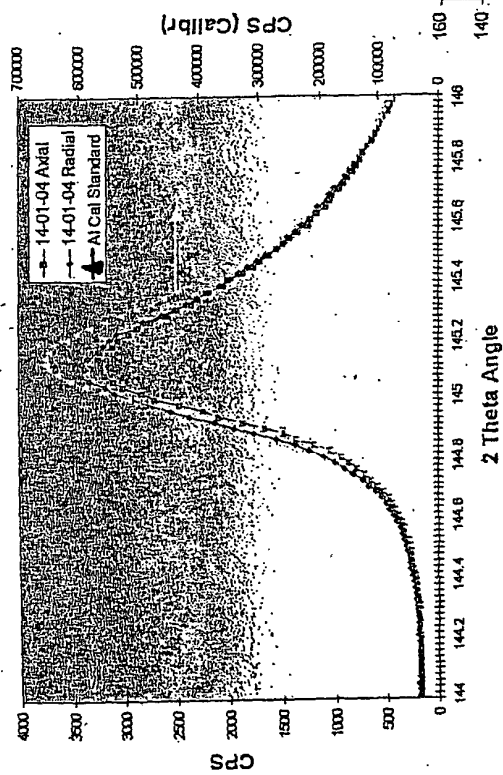


FIG. 27B



# Nickel Scans: Al and Zr



## K<sub>α</sub> Zirconium Scans of Nickel Run 14-01-04

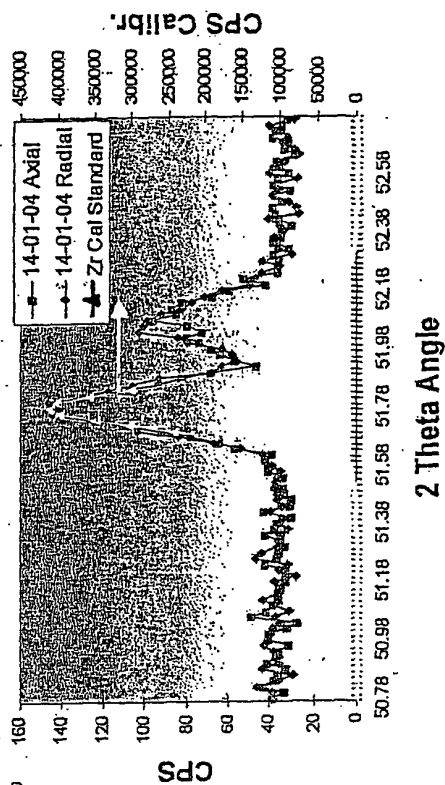
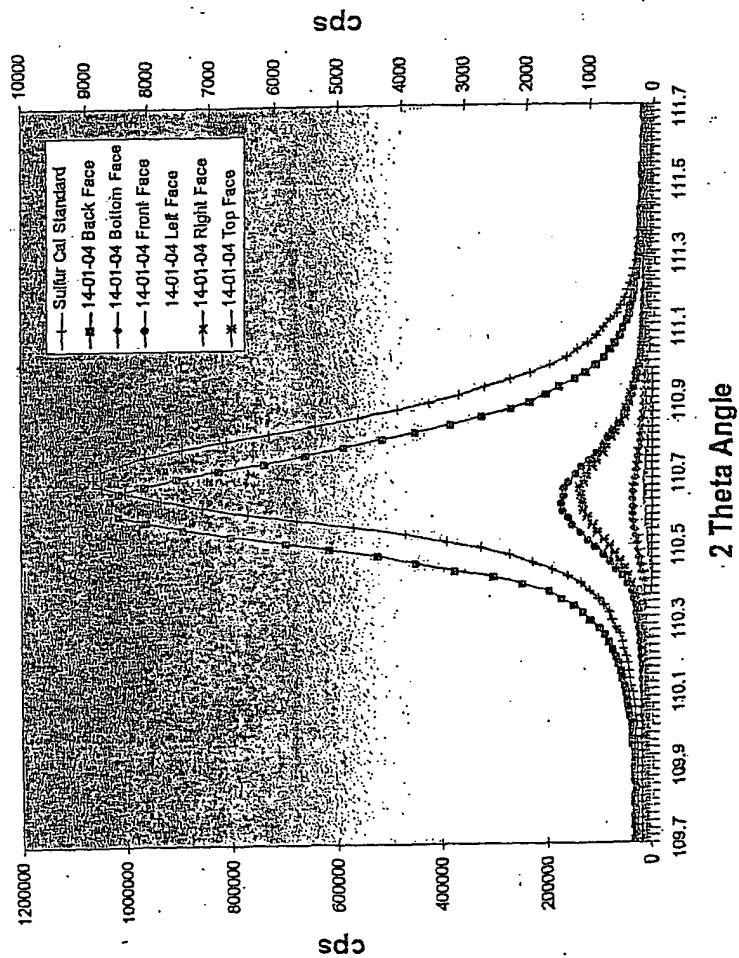


FIG. 28B

FIG. 28A

# Nickel Scans: Sulfur on 6 sides

K<sub>a</sub> Sulfur Scans of Nickel  
Run 14-01-04



Ingot analyzed on  
all six faces

FIG. 29

# Nickel Scans: Cl

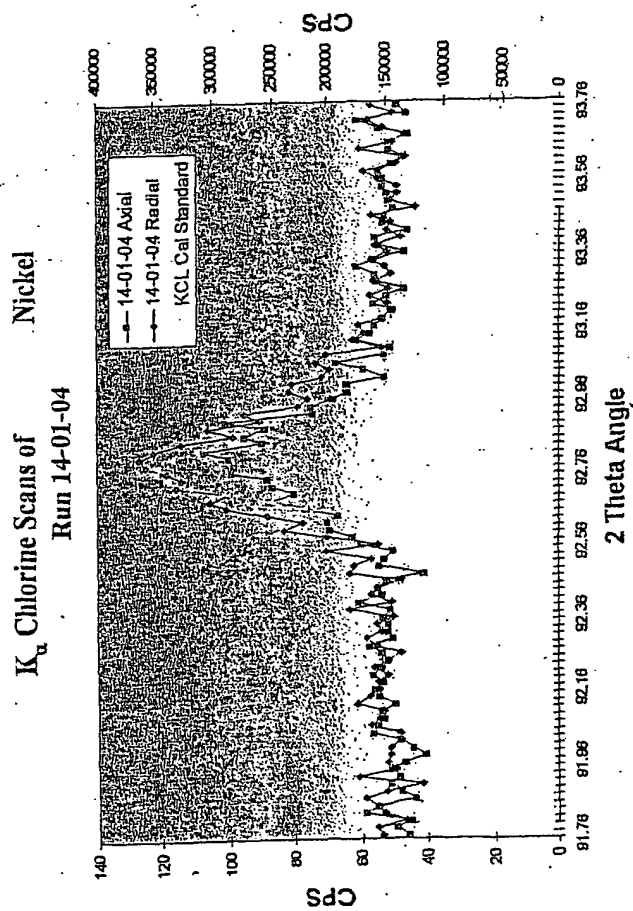
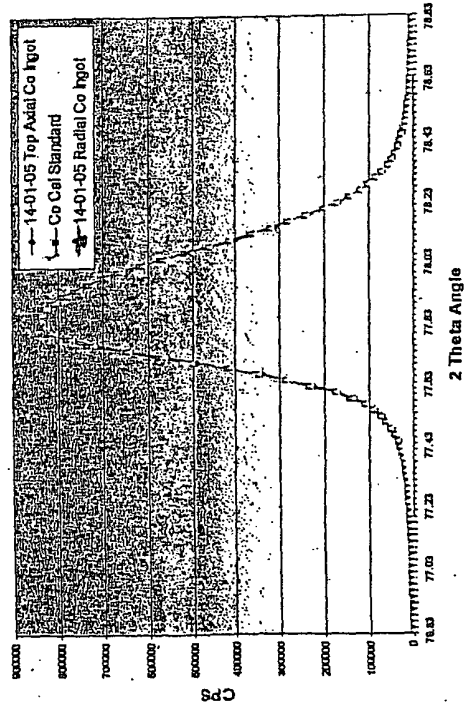


FIG. 30

# Cobalt Scans: Cobalt Analysis



**L<sub>α</sub> Cobalt Scans**  
Run 14-01-05

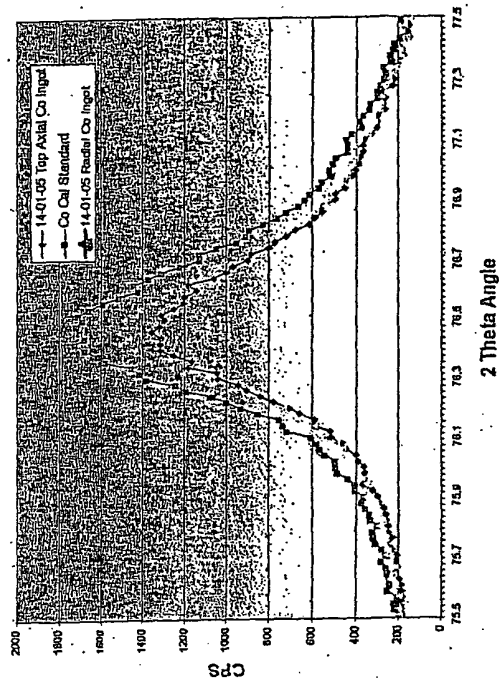
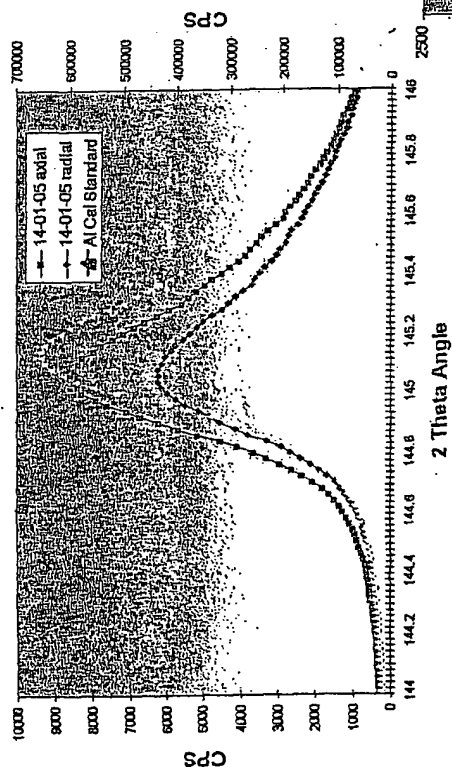


FIG. 31B

FIG. 31A

# Cobalt Scans: Al and Fe



## K<sub>α</sub> Iron Scans of Cobalt

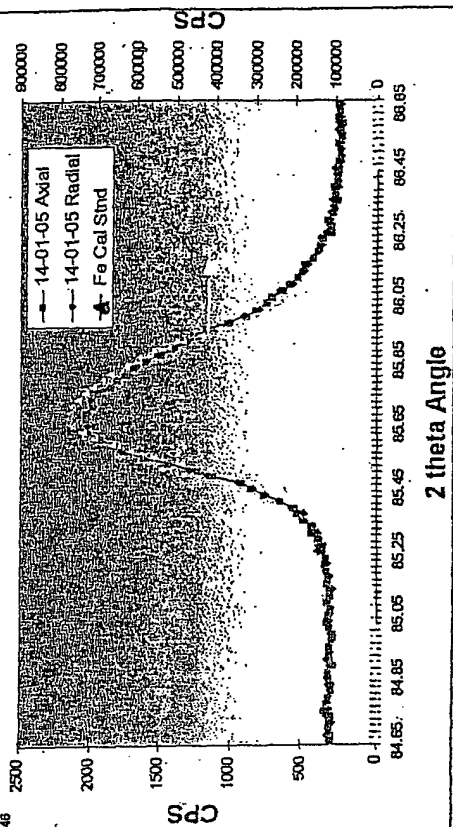


FIG. 32A

FIG. 32B

# Cobalt Scans: Cl and Zr

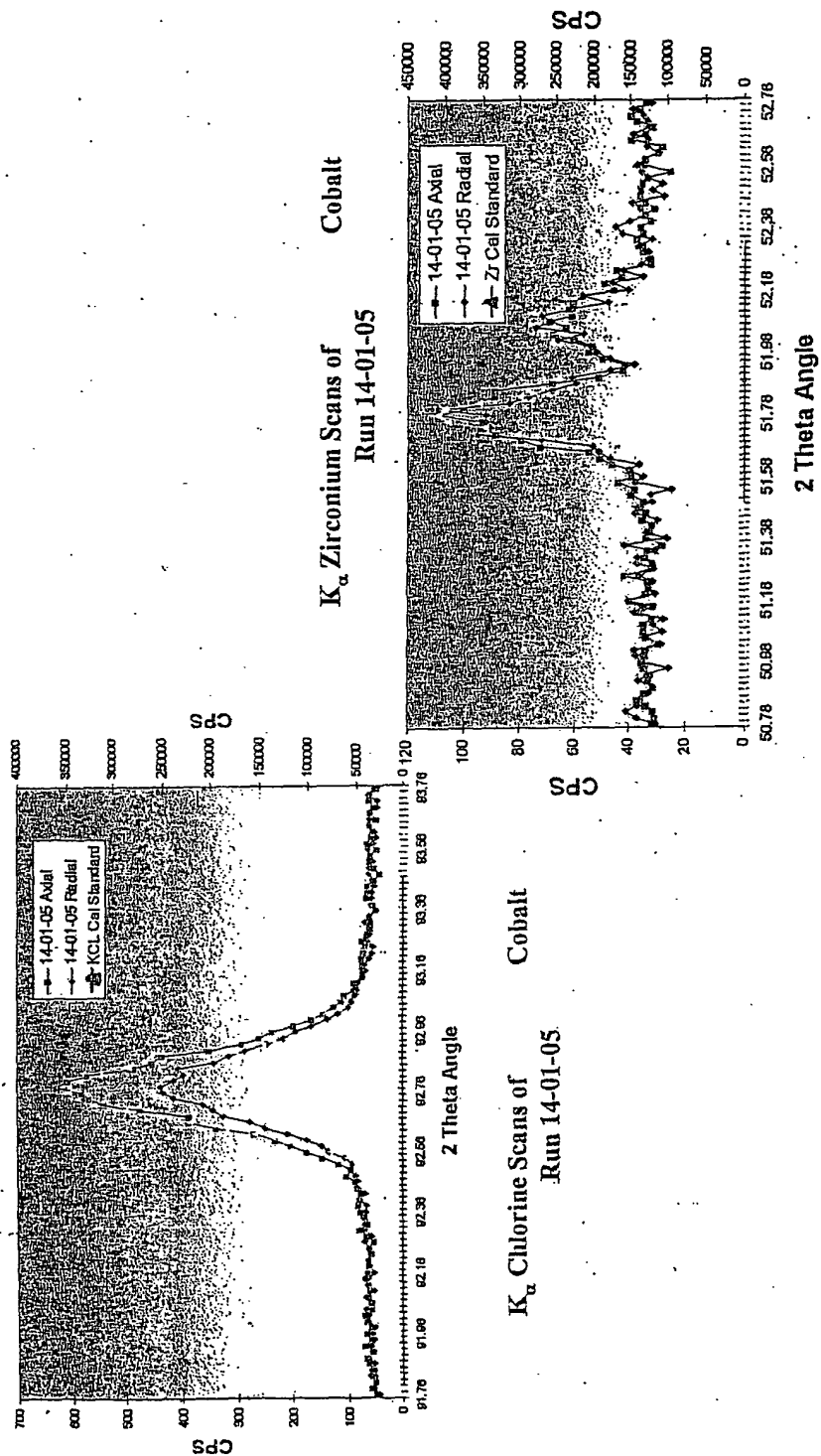
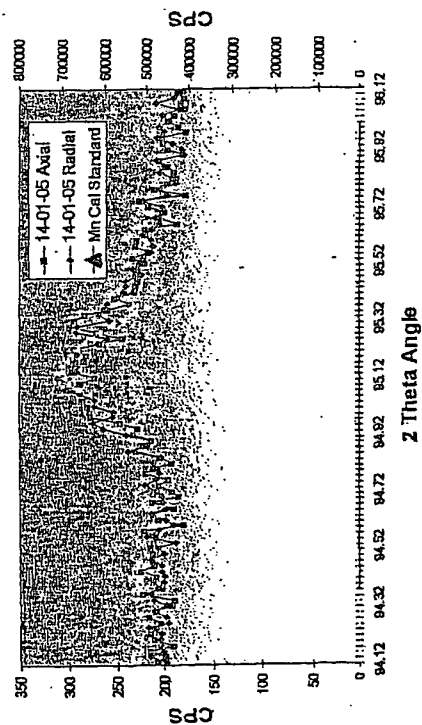


FIG. 33A

FIG. 33B

# Cobalt Scans: Mn



K<sub>α</sub> Manganese Scans of Cobalt  
Run 14-01-05

FIG. 34

14-01-06 Cu - Axial and Radial Samples vs Cu Cal Standard (LiF200/FPC)

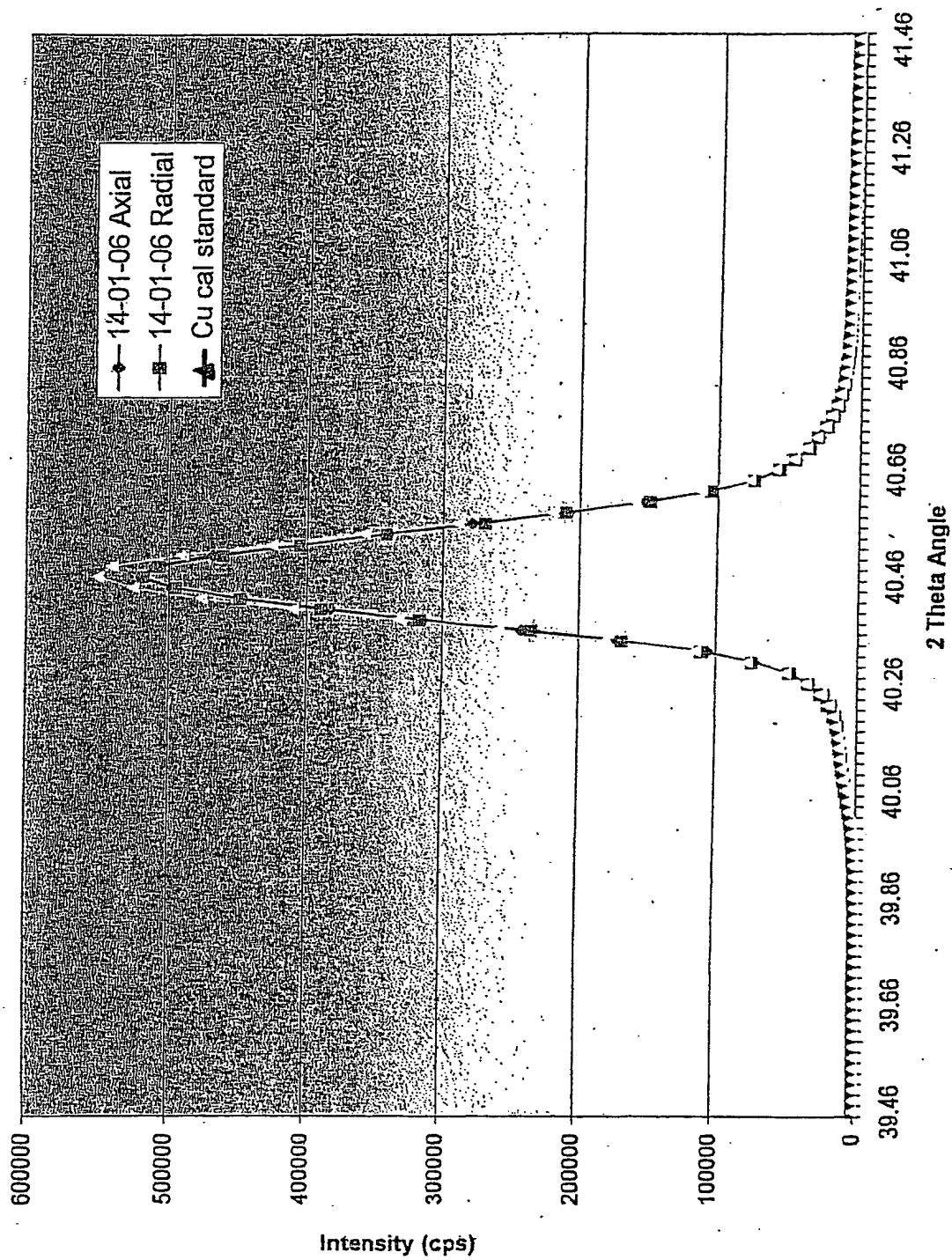


FIG. 35



# 14-01-06 Au- Axial and Radial Samples vs Au Cal Standard (LIF420/SC)

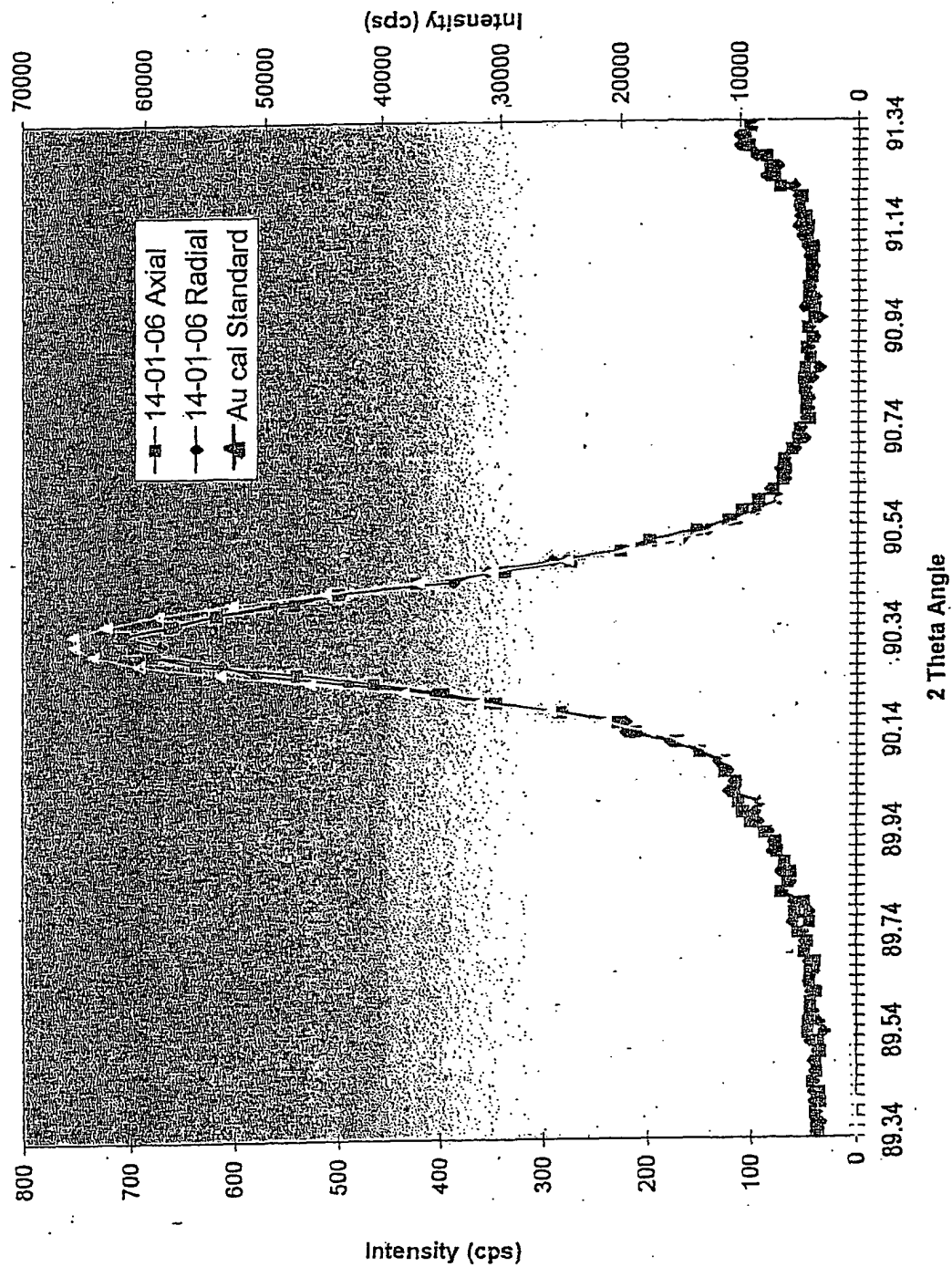


FIG. 36

14-01-06 Ag: Axial and Radial Samples vs Ag Cal Standard (LiF220/SC)

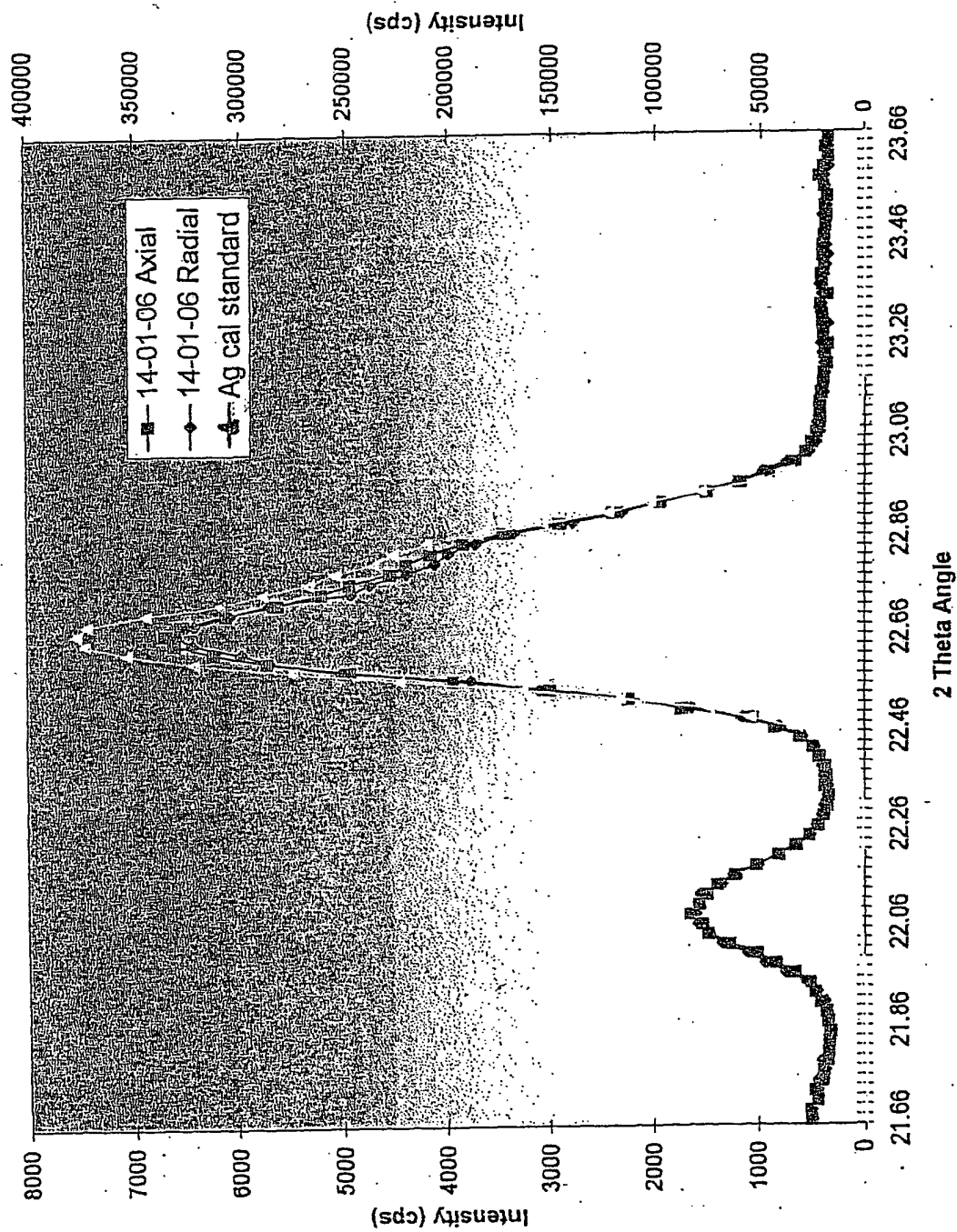


FIG. 37

# 14-01-07 Sn- Axial and Radial vs Sn Cal Standard

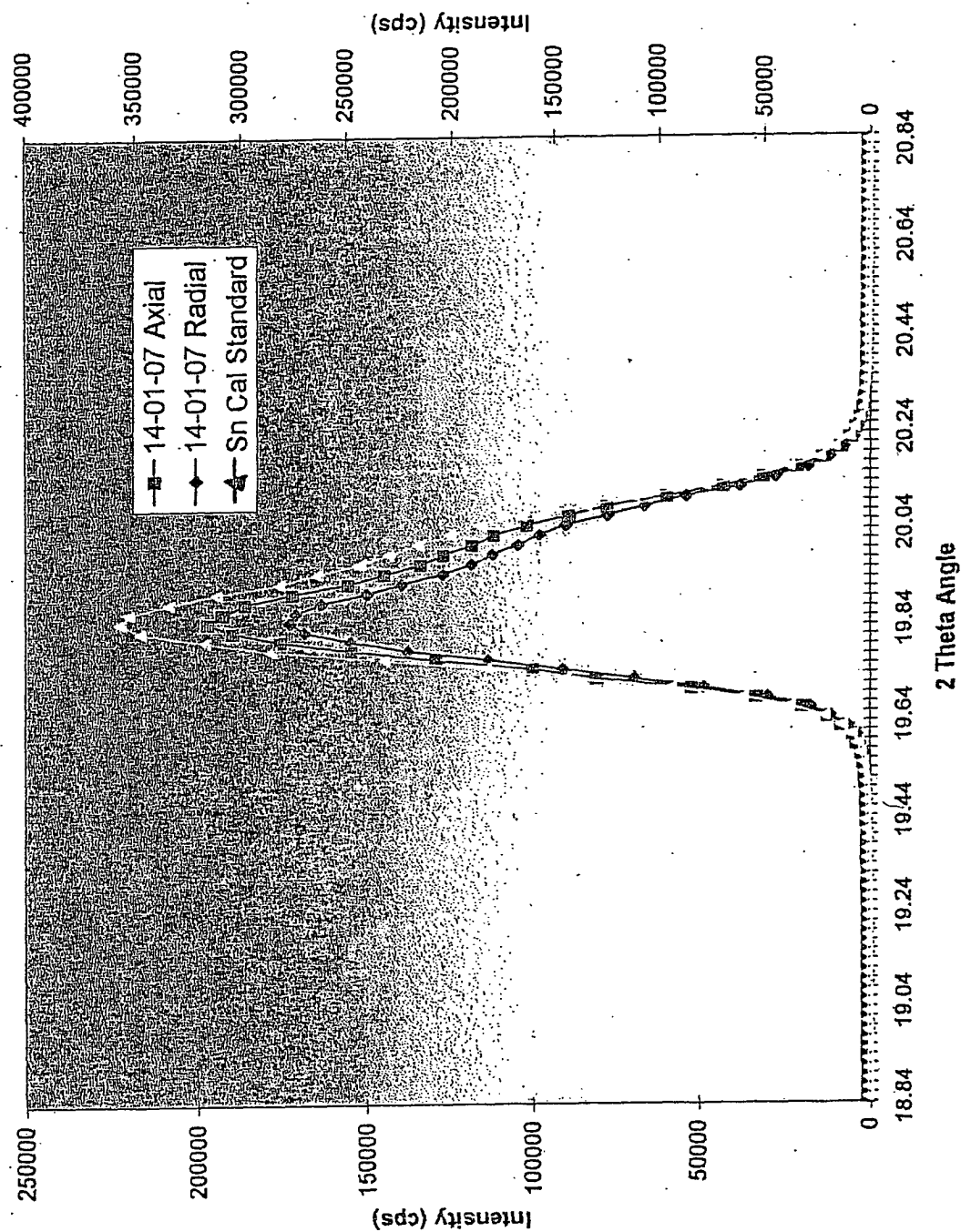


FIG. 38

# 14-01-07 Zn-- Axial and Radial vs Zn Cal Standard (LiF220/FPC)

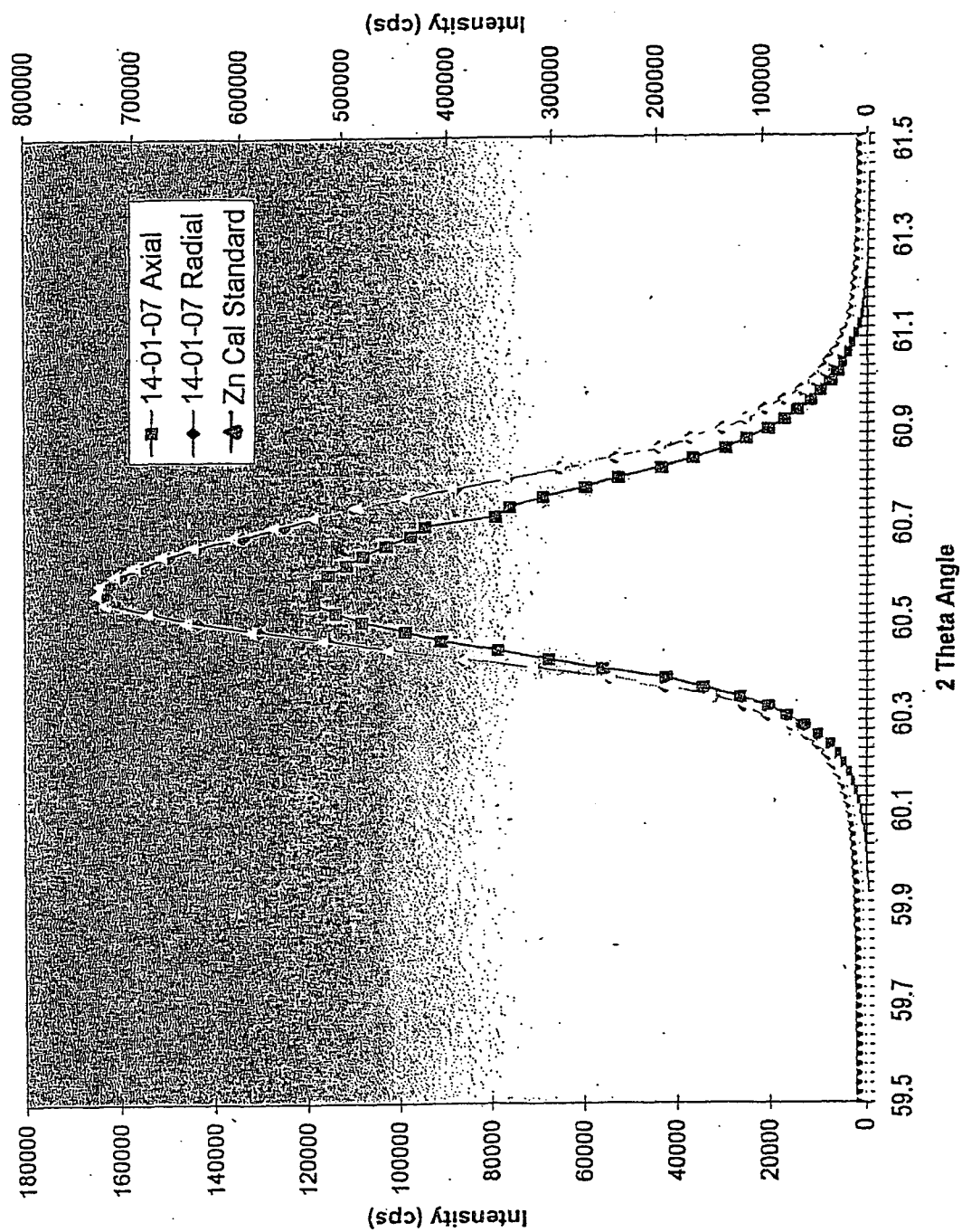


FIG. 39

14-01-07 Pb-Axial and Radial vs Pb Cal Standard

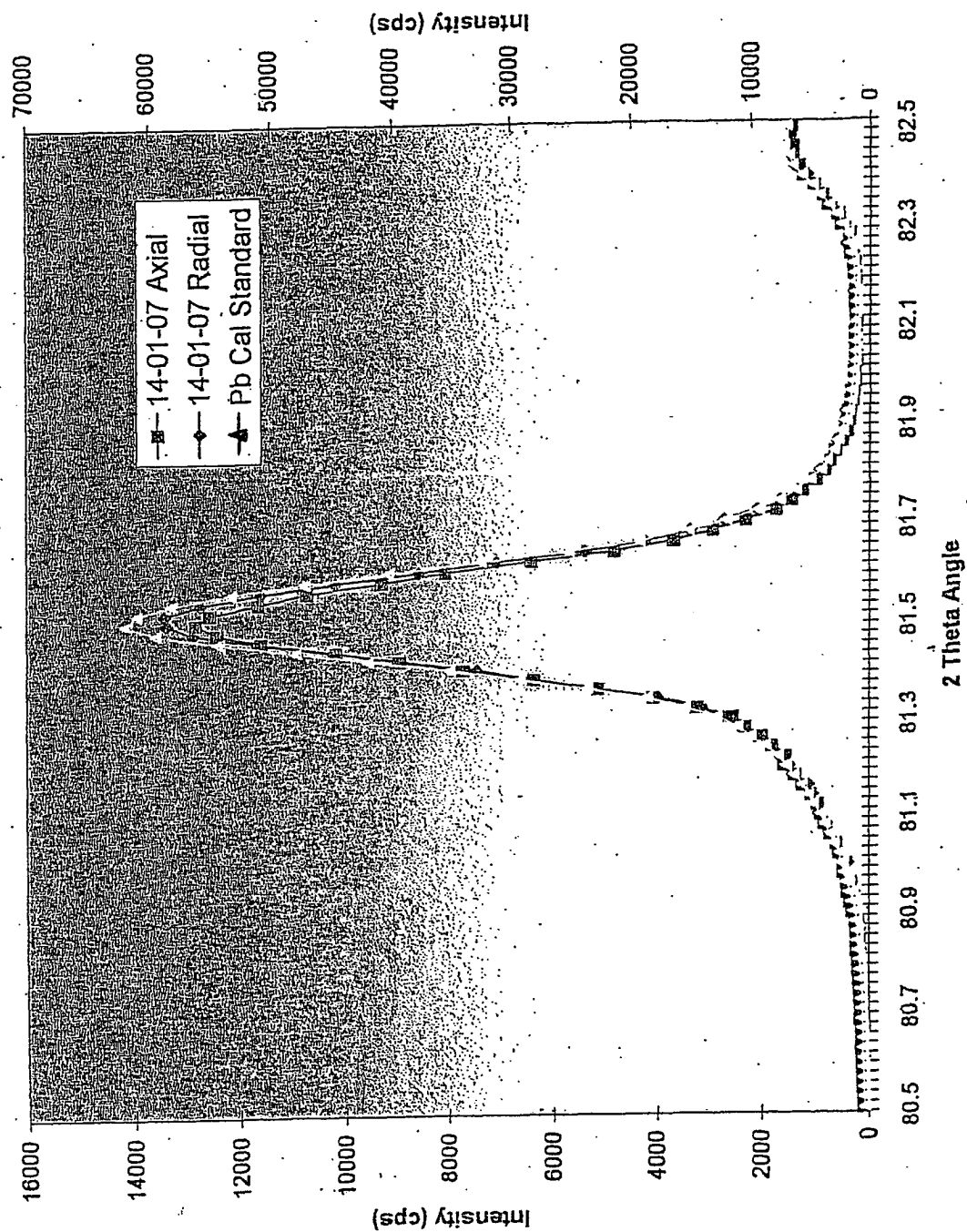


FIG. 40

14-01-08 scans for K

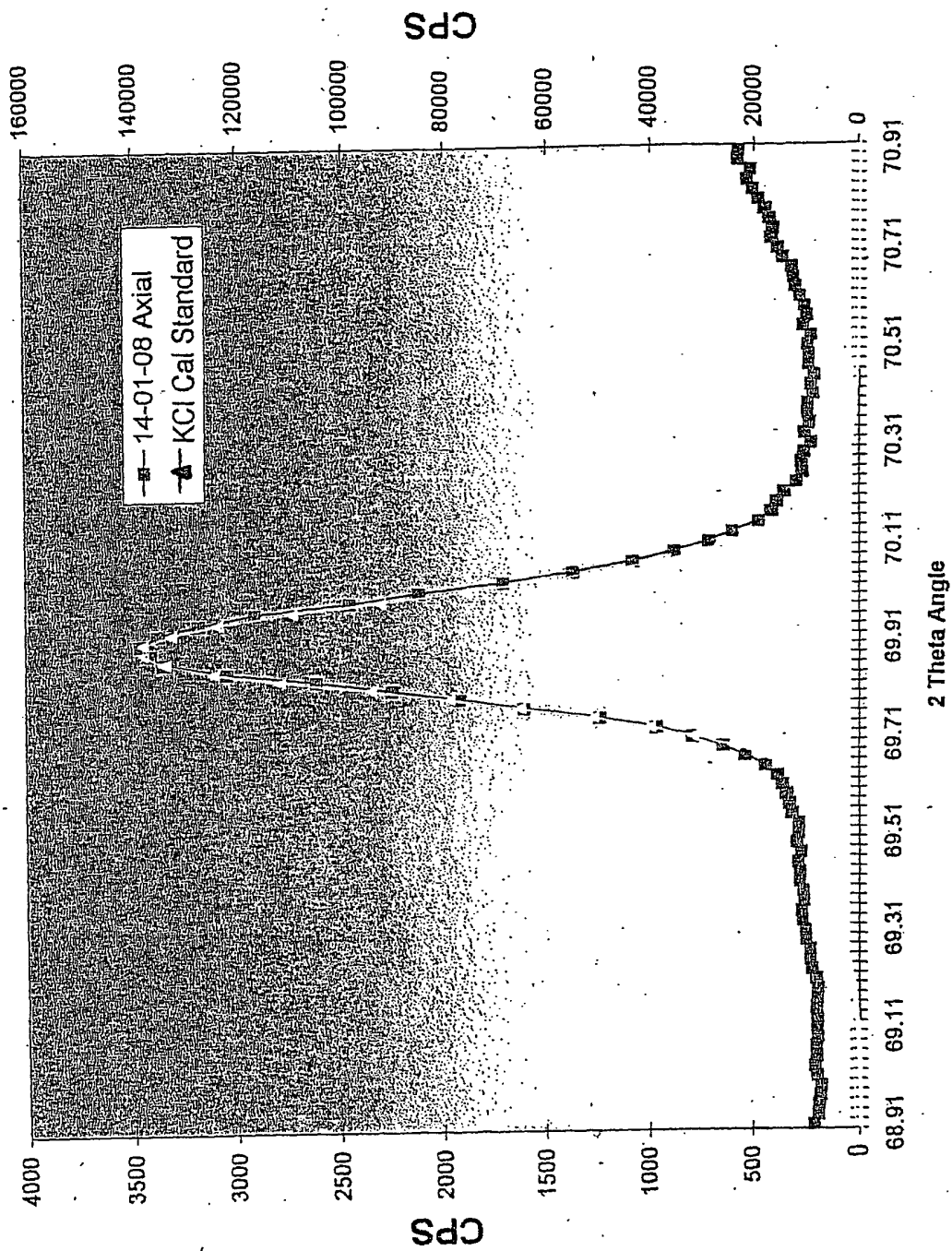


FIG. 41

14-01-08 Sn- Axial and Radial vs Sn Cal Standard

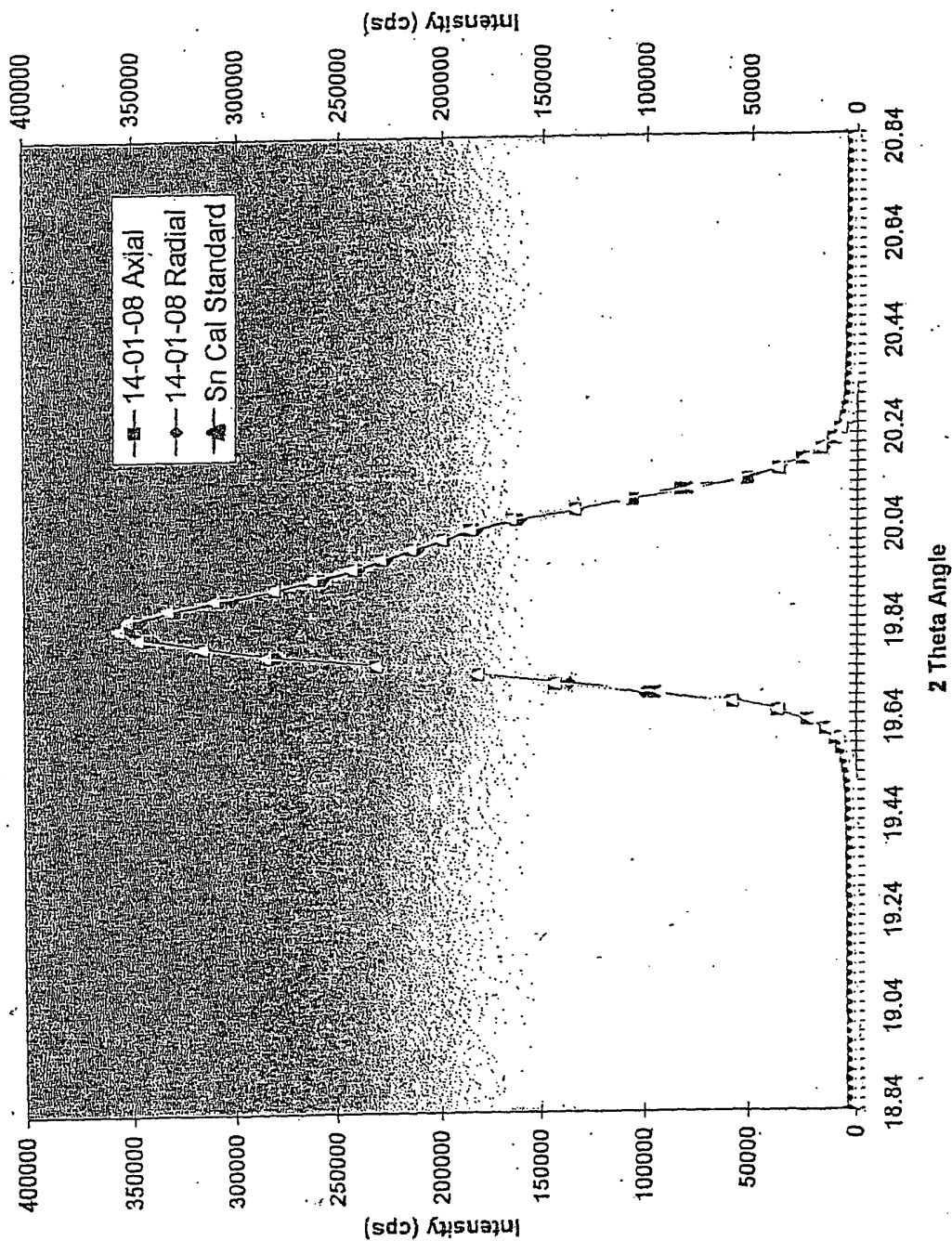


FIG. 42

14-01-08 Mg- Axial and Radial Samples vs MgO Cal Standard

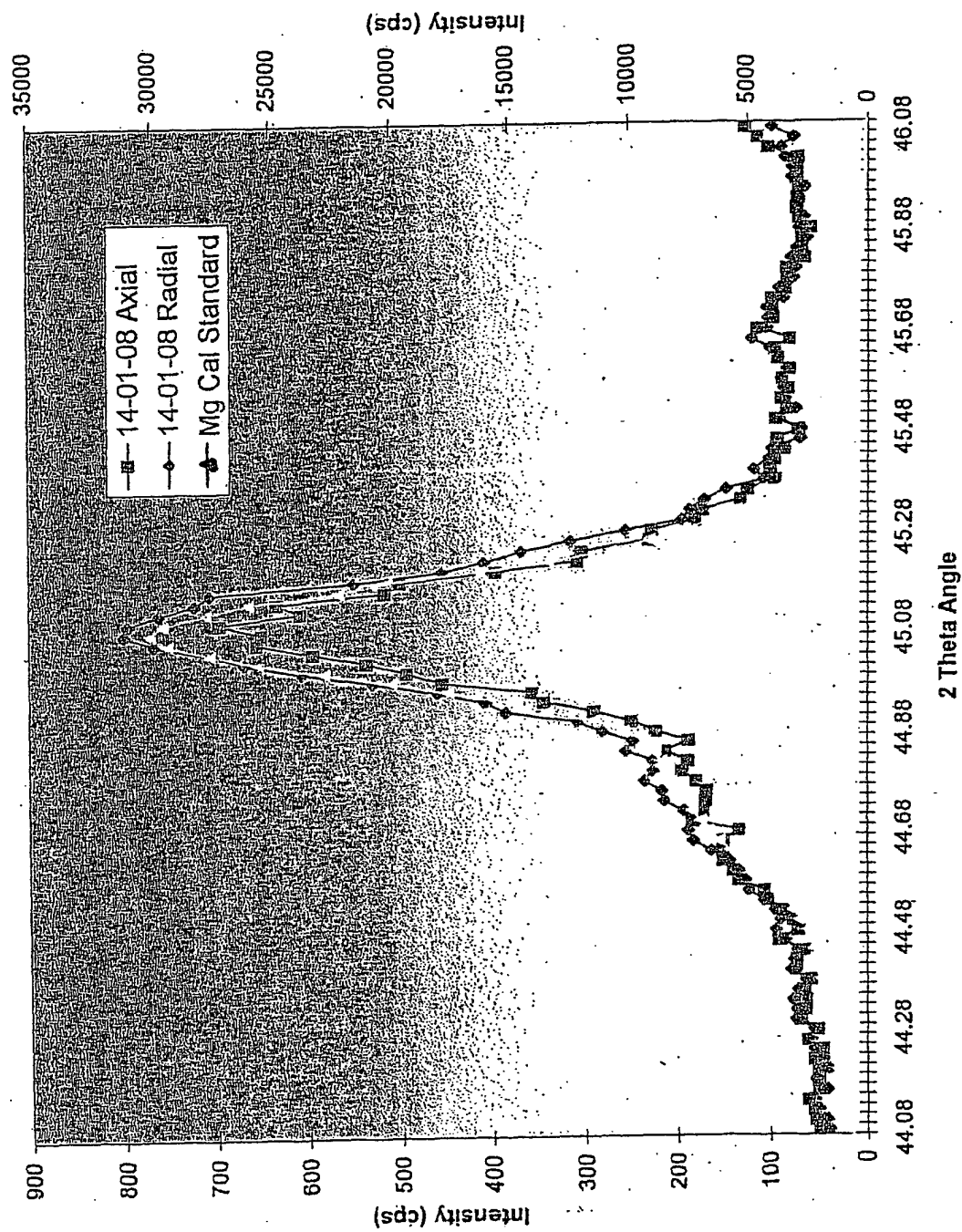


FIG. 43



14-01-08 Na-Axial and Radial Samples vs AlNa3F6 Cal Standard

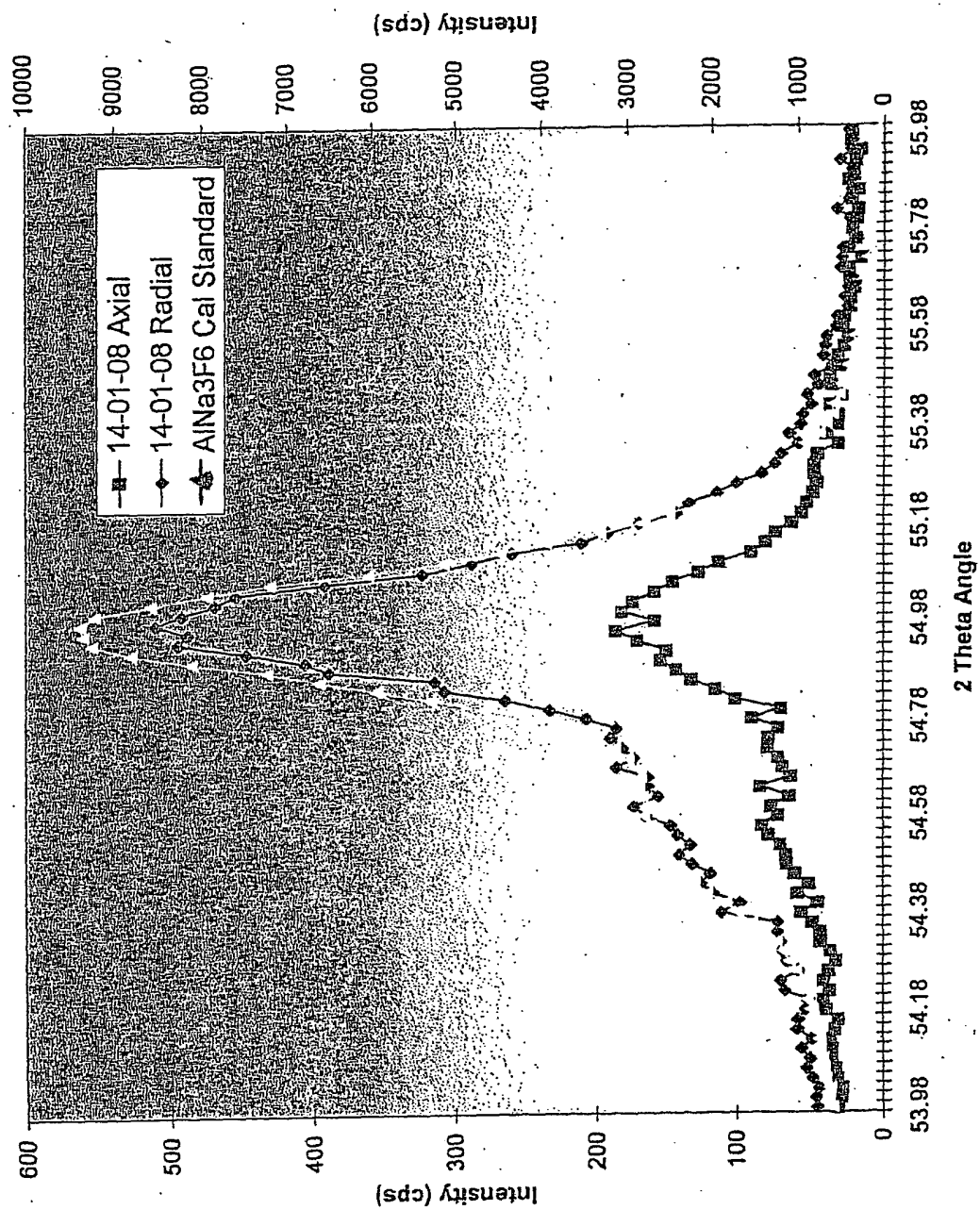
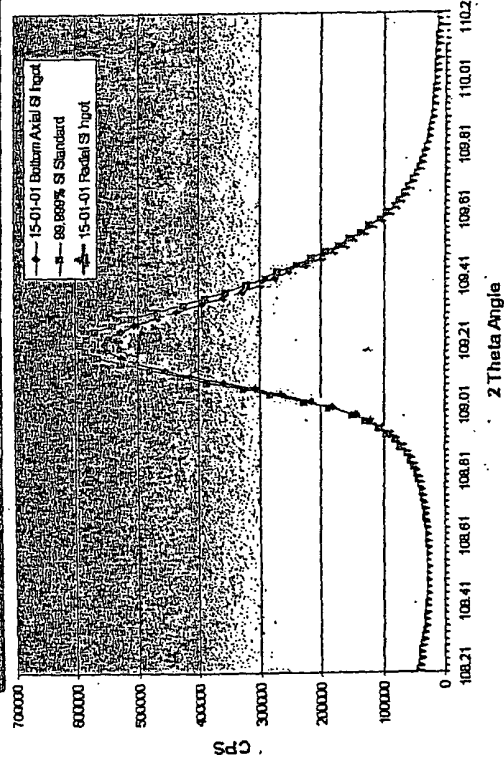


FIG. 44

# Silicon Scans: Silicon Analysis



**L $\beta$  Silicon Scans**  
Run 15-01-01

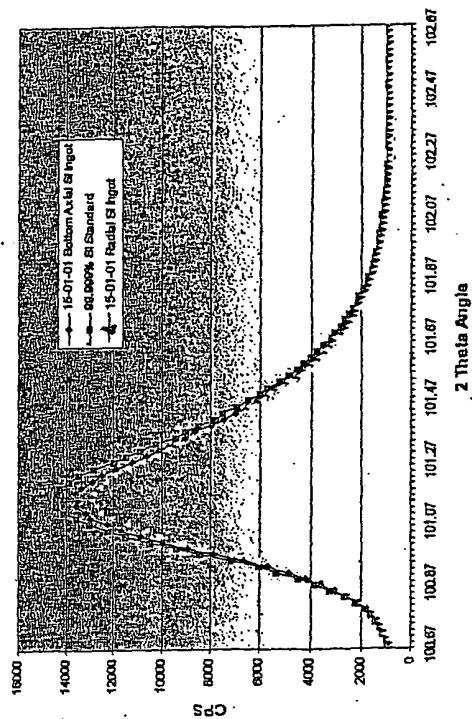
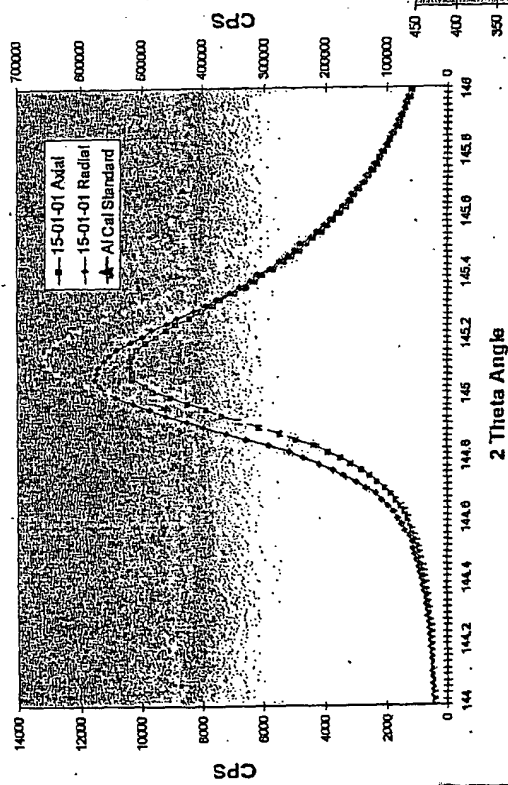


FIG. 45B

FIG. 45A

# Silicon Scans: Al and Ti



## K<sub>α</sub> Titanium Scans of Silicon

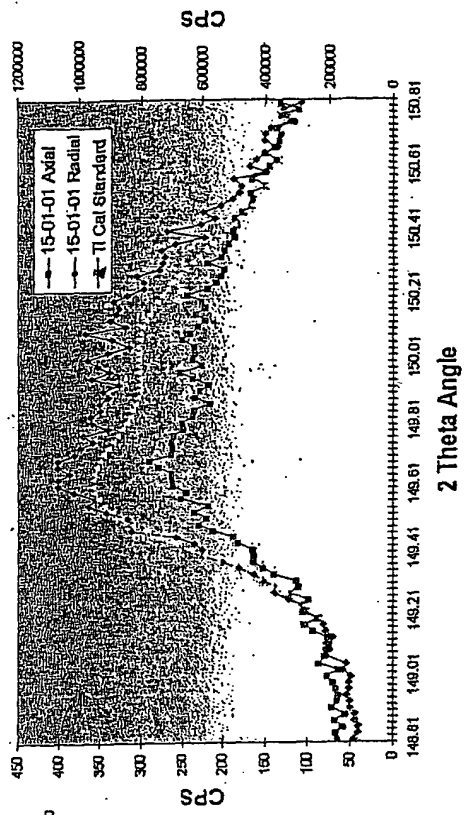
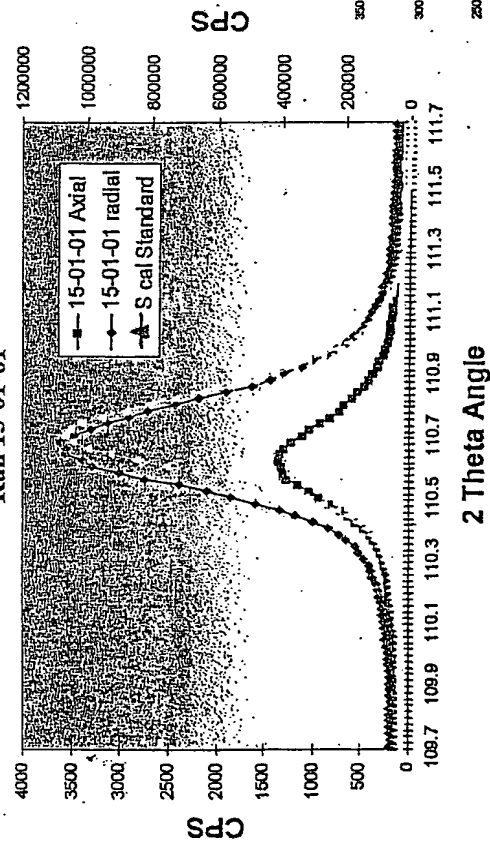


FIG. 46B

FIG. 46A

# Silicon Scans: S and Cl

K<sub>α</sub> Sulfur Scans of Silicon  
Run 15-01-01



K<sub>α</sub> Chlorine Scans of Silicon  
Run 15-01-01

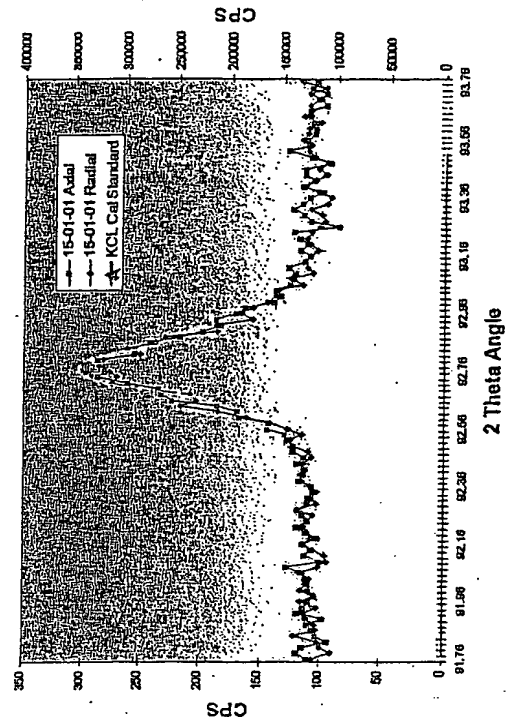
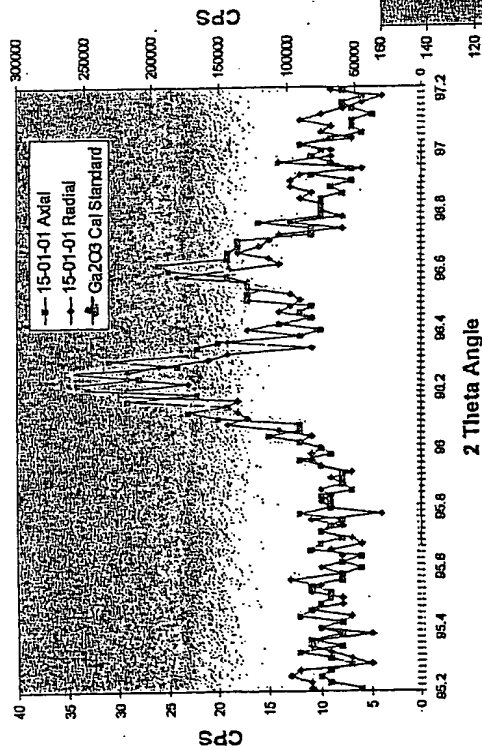


FIG. 47B

FIG. 47A

# Silicon Scans: Ga and K

$K_{\alpha}$  Gallium Scans of Silicon  
Run 15-01-01



$K_{\alpha}$  Potassium Scans of Silicon  
Run 15-01-01

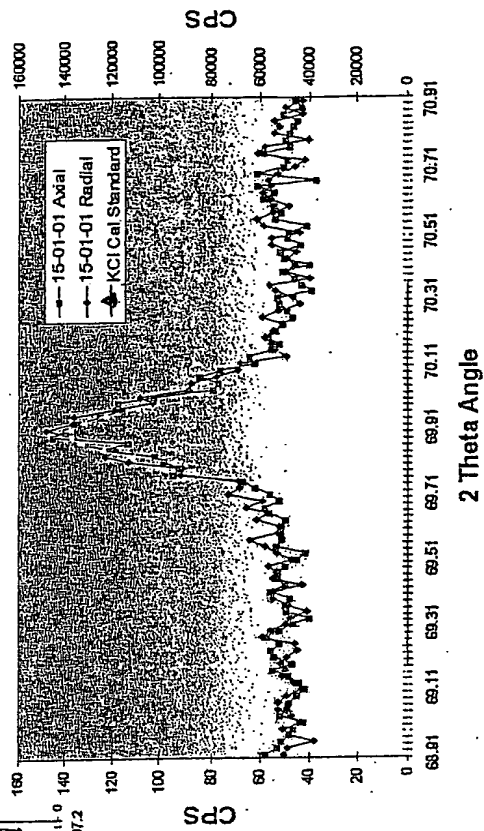
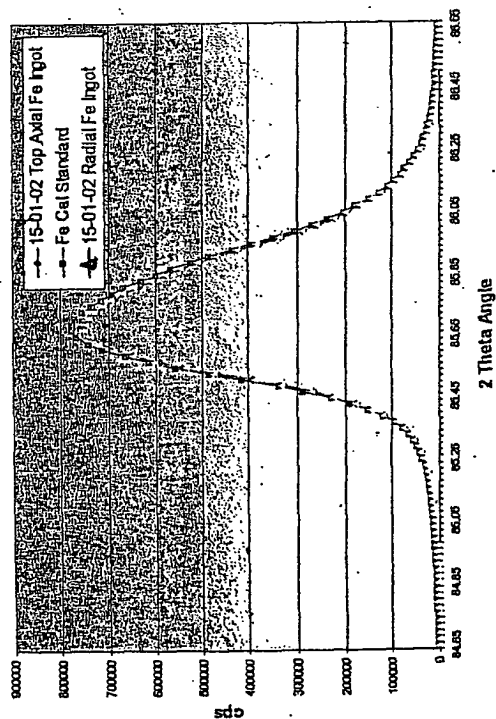


FIG. 48B

FIG. 48A

# Iron Scans: Iron Analysis



## L<sub>α</sub> Iron Scans of Iron

Run 15-01-02

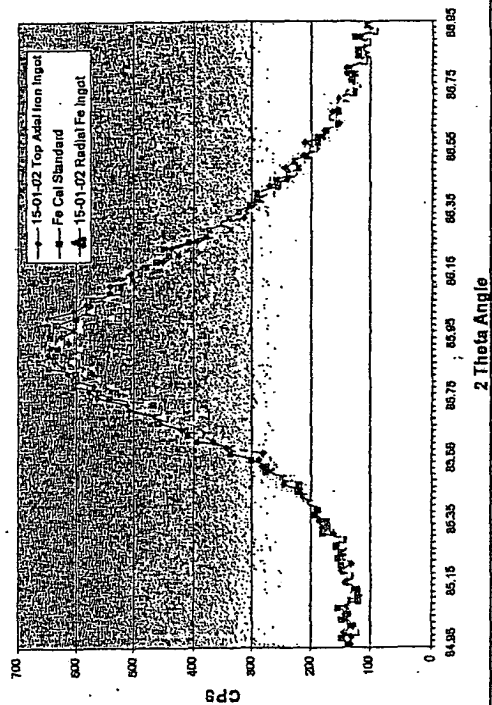
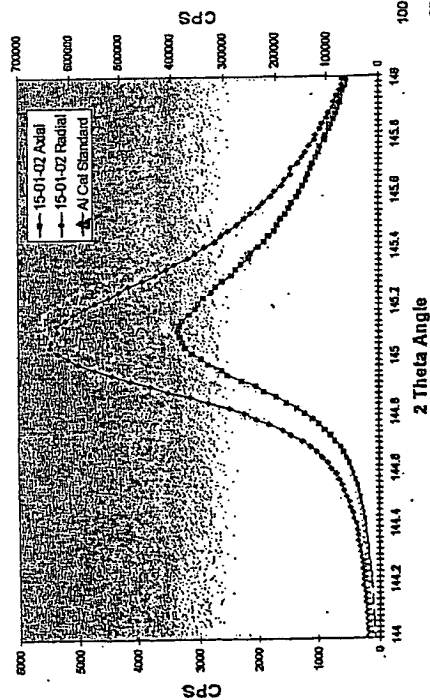


FIG. 49A

FIG. 49B

# Iron Scans: Al and Zr



## K<sub>α</sub> Zr Scans of Iron Run 15-01-02

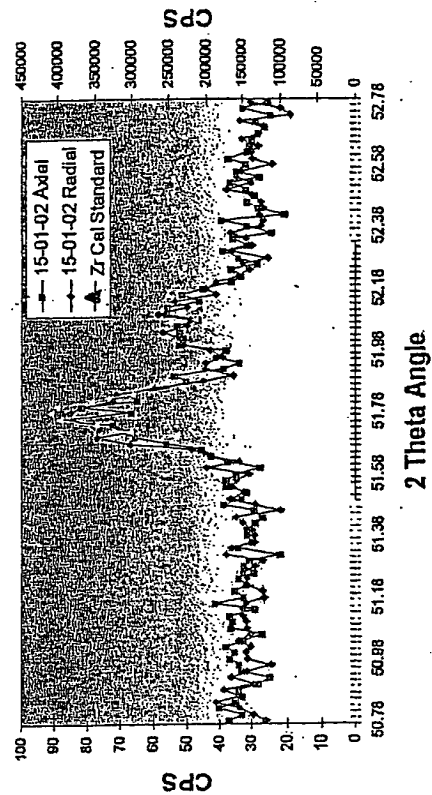
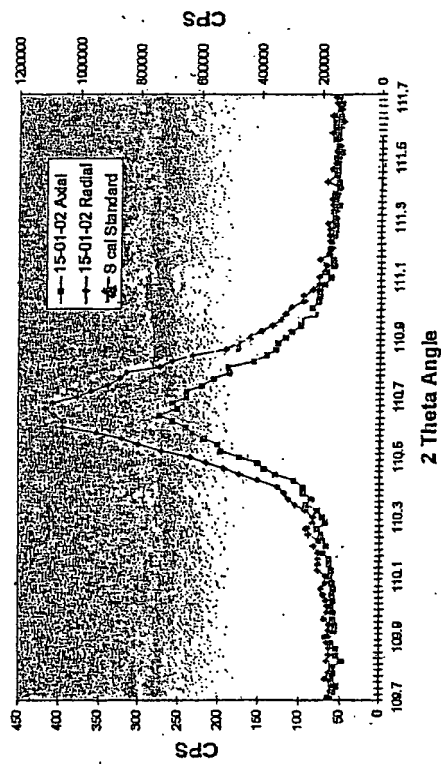


FIG. 50A

FIG. 50B

# Iron Scans: S and Cl

$K_{\alpha}$  Sulfur Scans of Iron  
Run 15-01-02



$K_{\alpha}$  Chlorine Scans of Iron  
Run 15-01-02

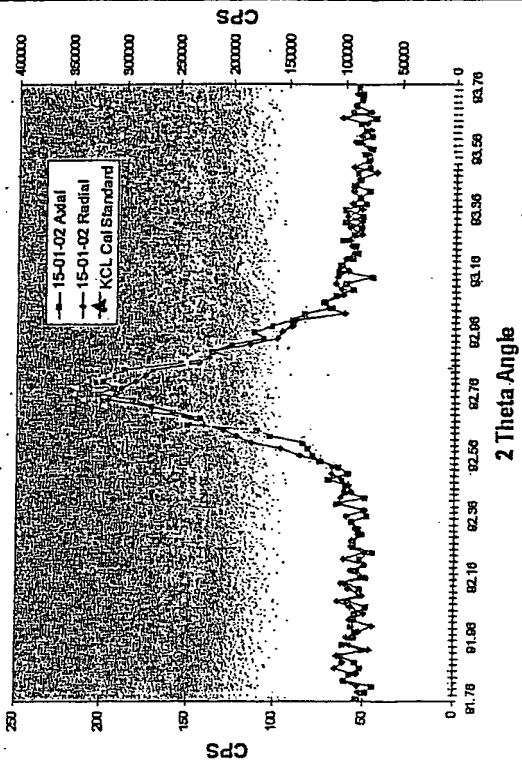


FIG. 51A

FIG. 51B



15-01-03 Cr- Axial and Radial Samples vs Cr2O3 Cal Standard (LiF220/FPC)

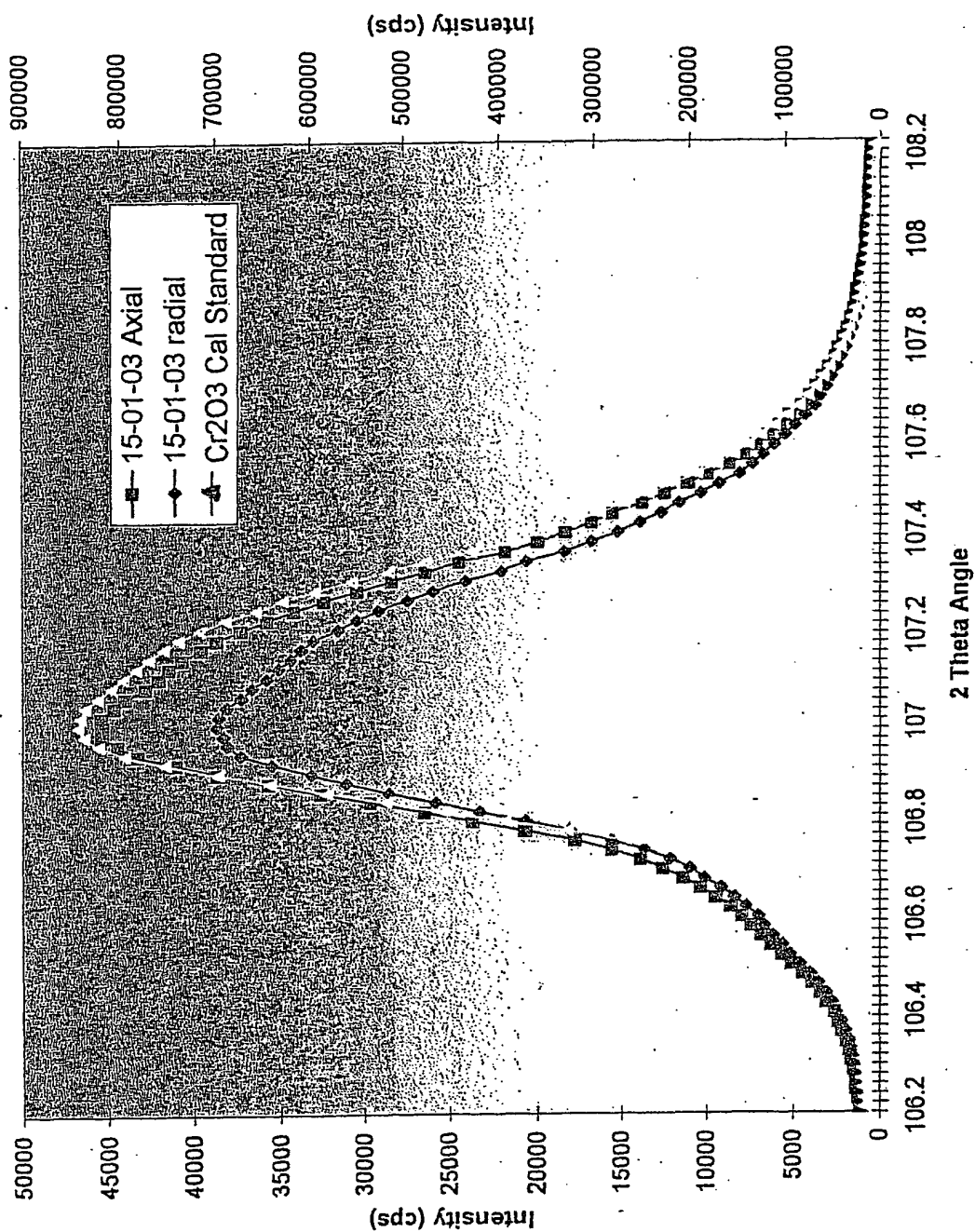


FIG. 52

15-01-03 Fe- Axial and Radial vs Fe Cal Standard (LiF220/FPC)

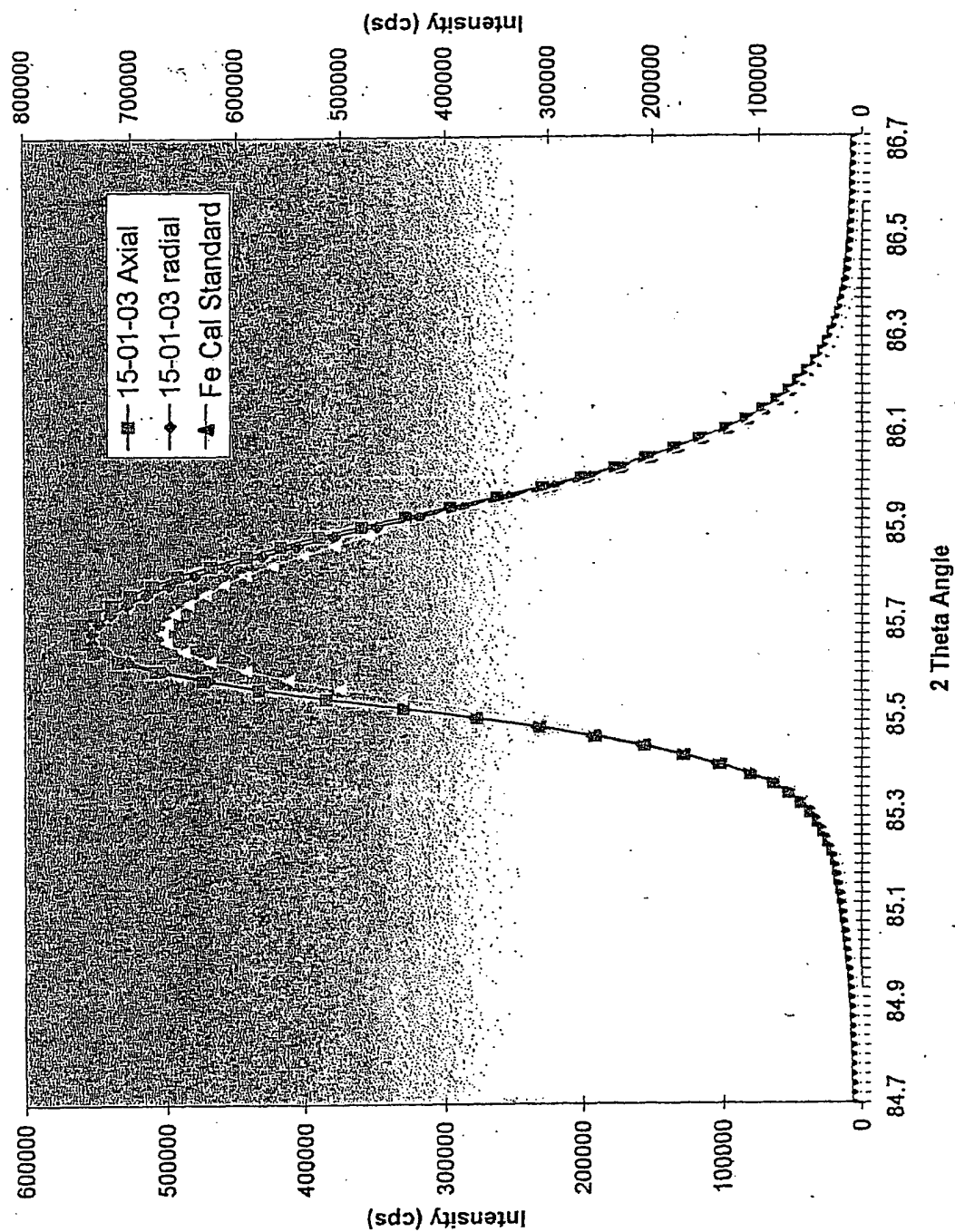


FIG. 53

15-01-03 V- axial and radial samples vs V cal standard (LiF220/FPC)

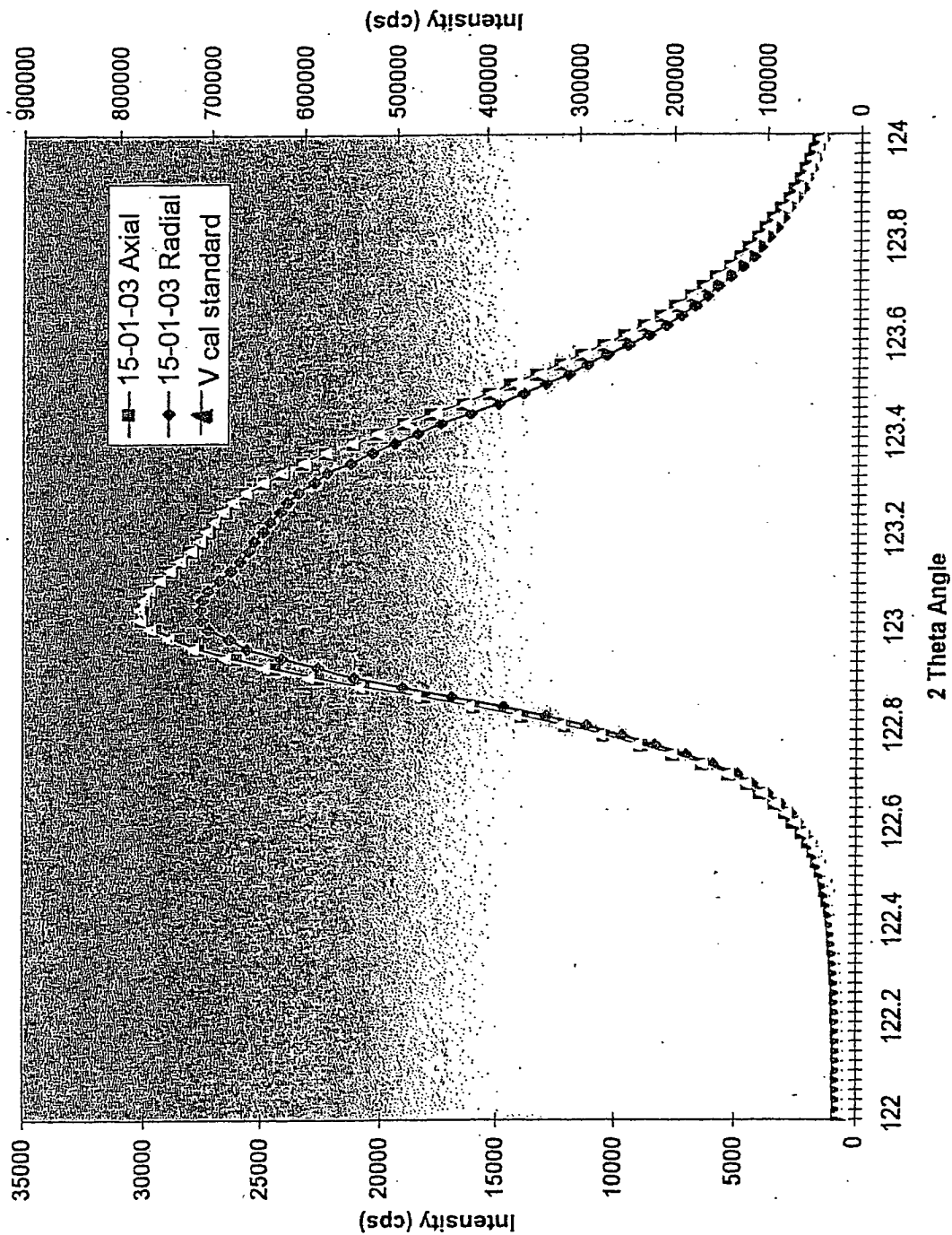


FIG. 54

15-01-03 Mn-Axial and Radial Sample vs Mn Cal Standard (LiF220/FPC)

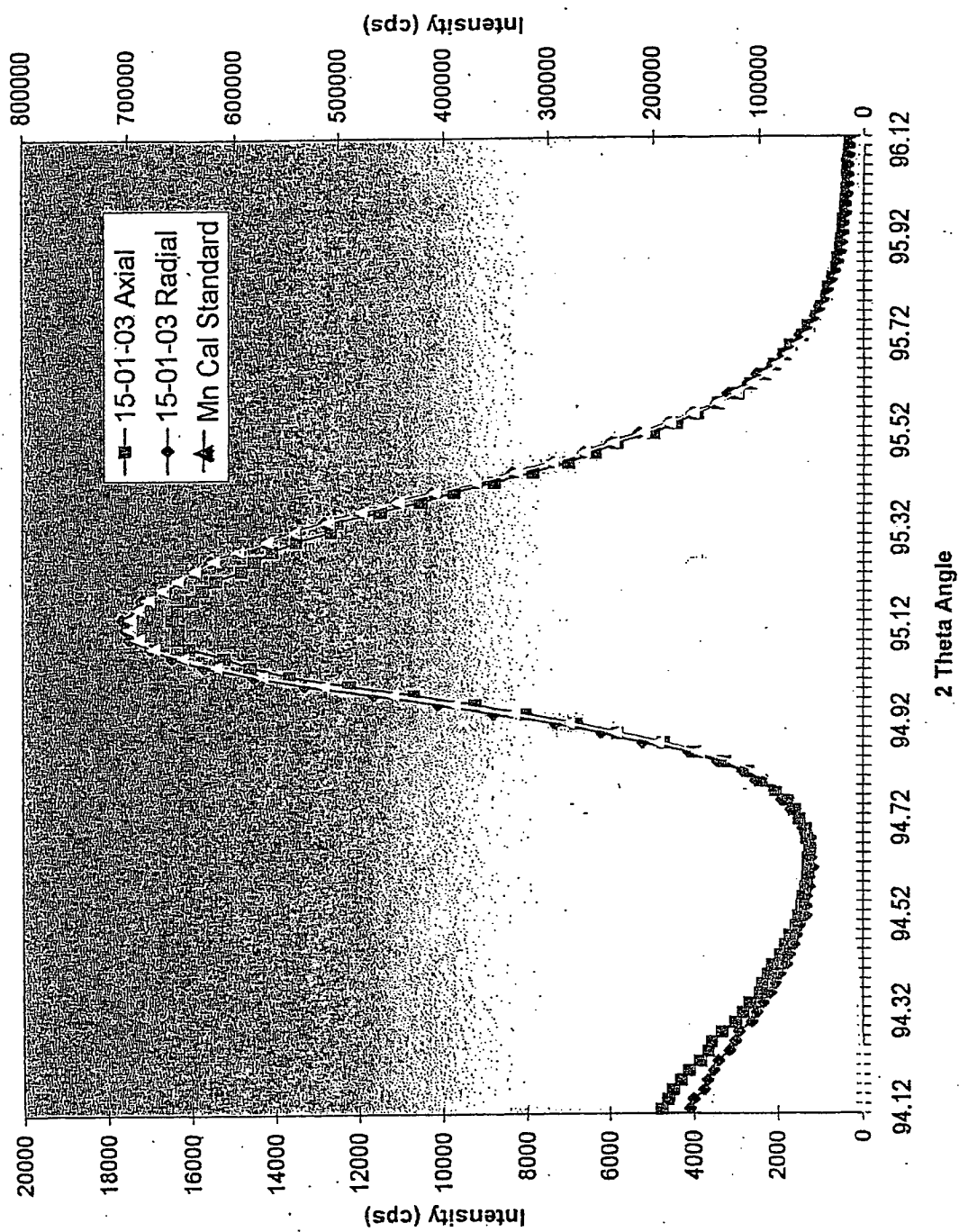


FIG. 55

# 15-01-03 Cube scans for Sulfur (6 Sides) Ge111/FPC

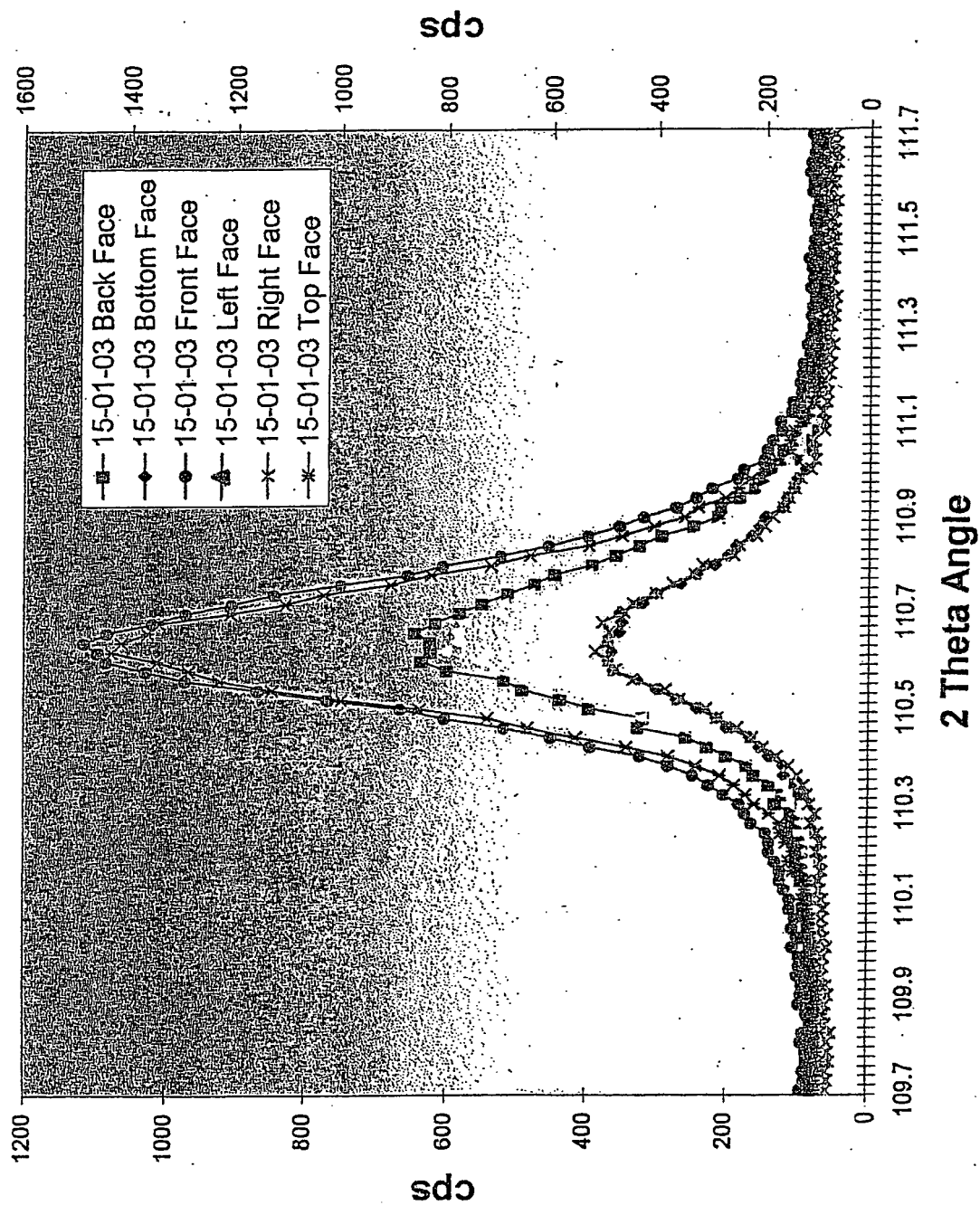


FIG. 56

# 15-01-04 Ta- Axial and Radial vs Ta Cal Standard

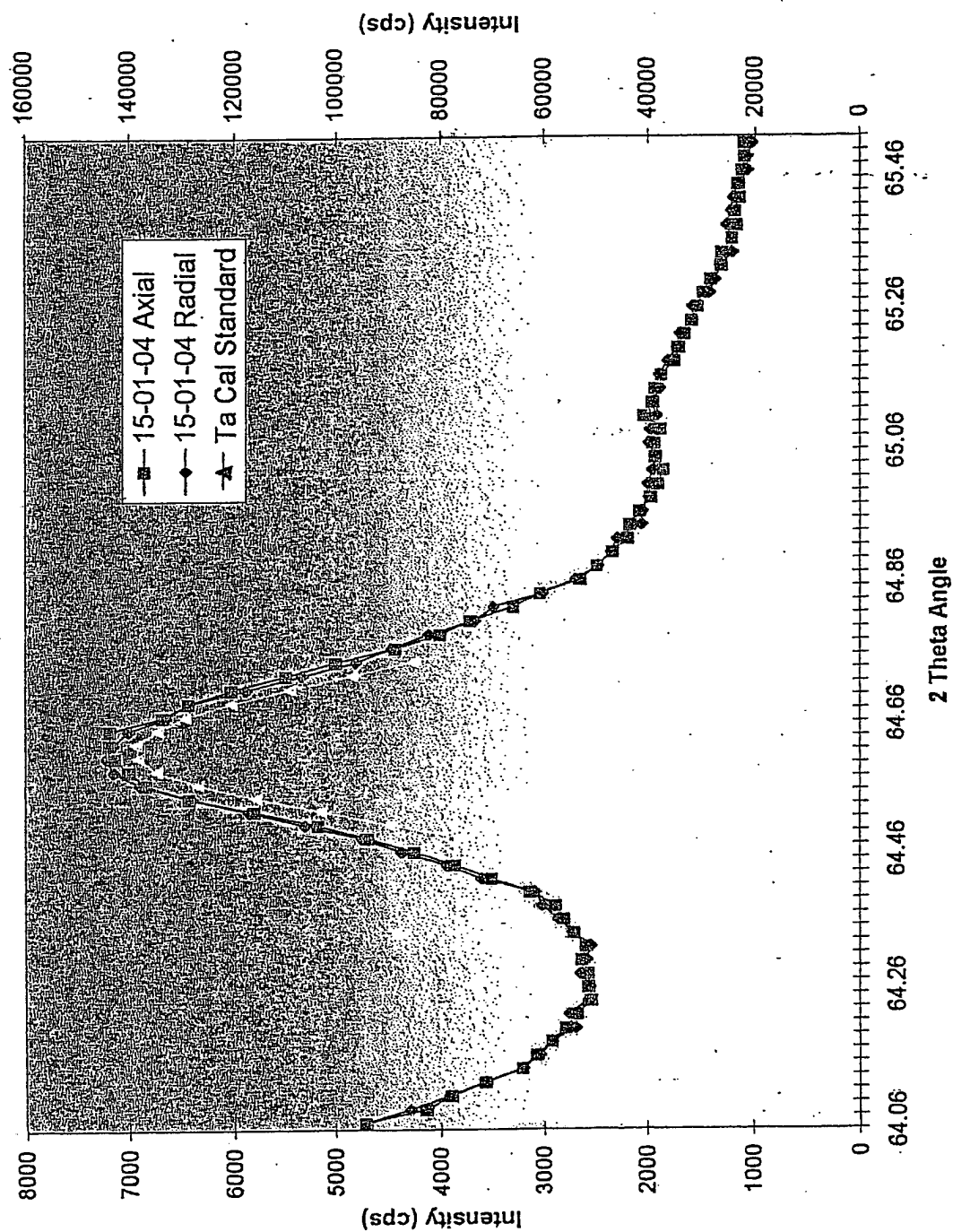


FIG. 57

# 15-01-04 W- Axial and Radial Samples vs W Cal Standard

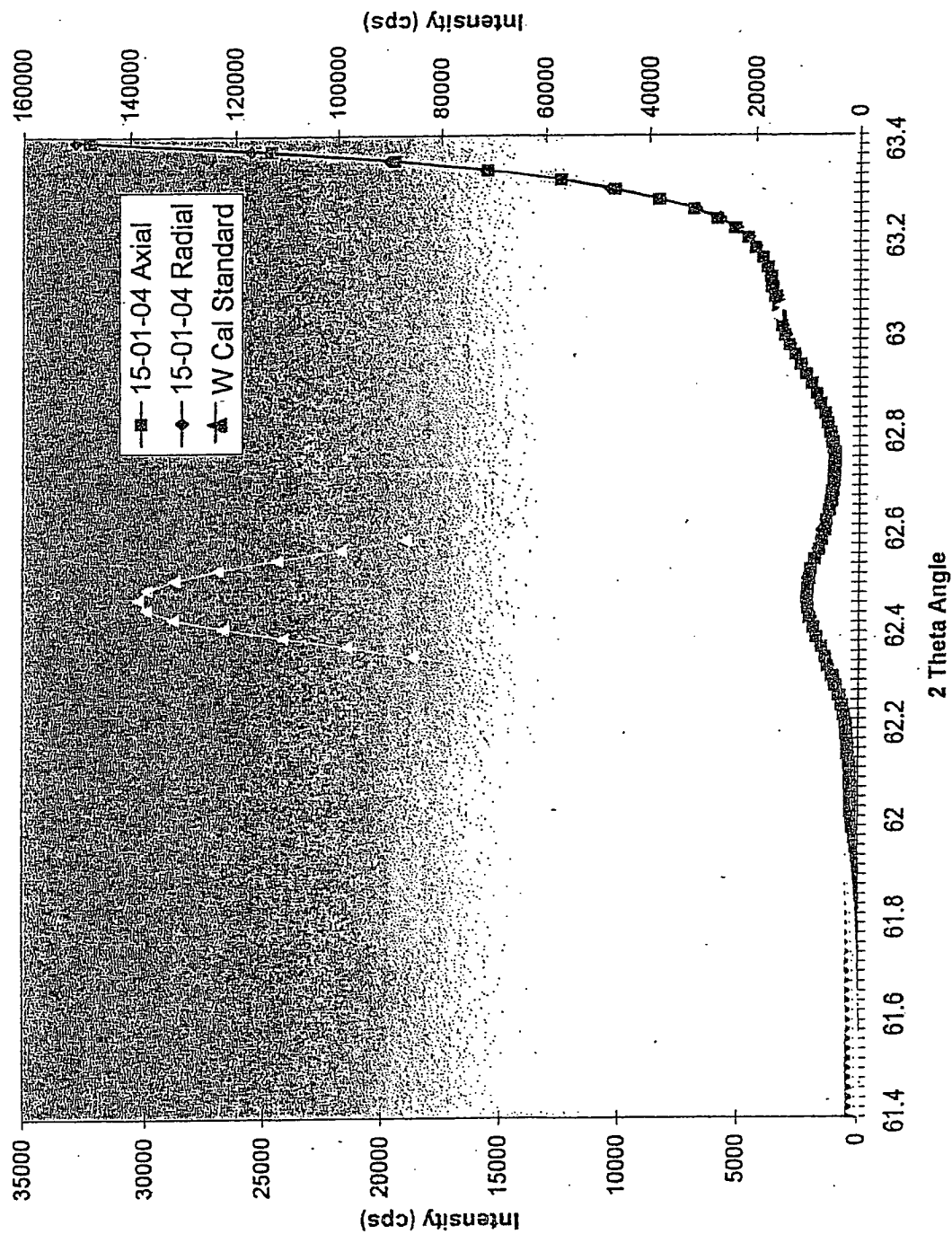


FIG. 58

15-01-04 Hf- Axial and Radial Samples vs Hf Cal Standard (LiF420/SC)

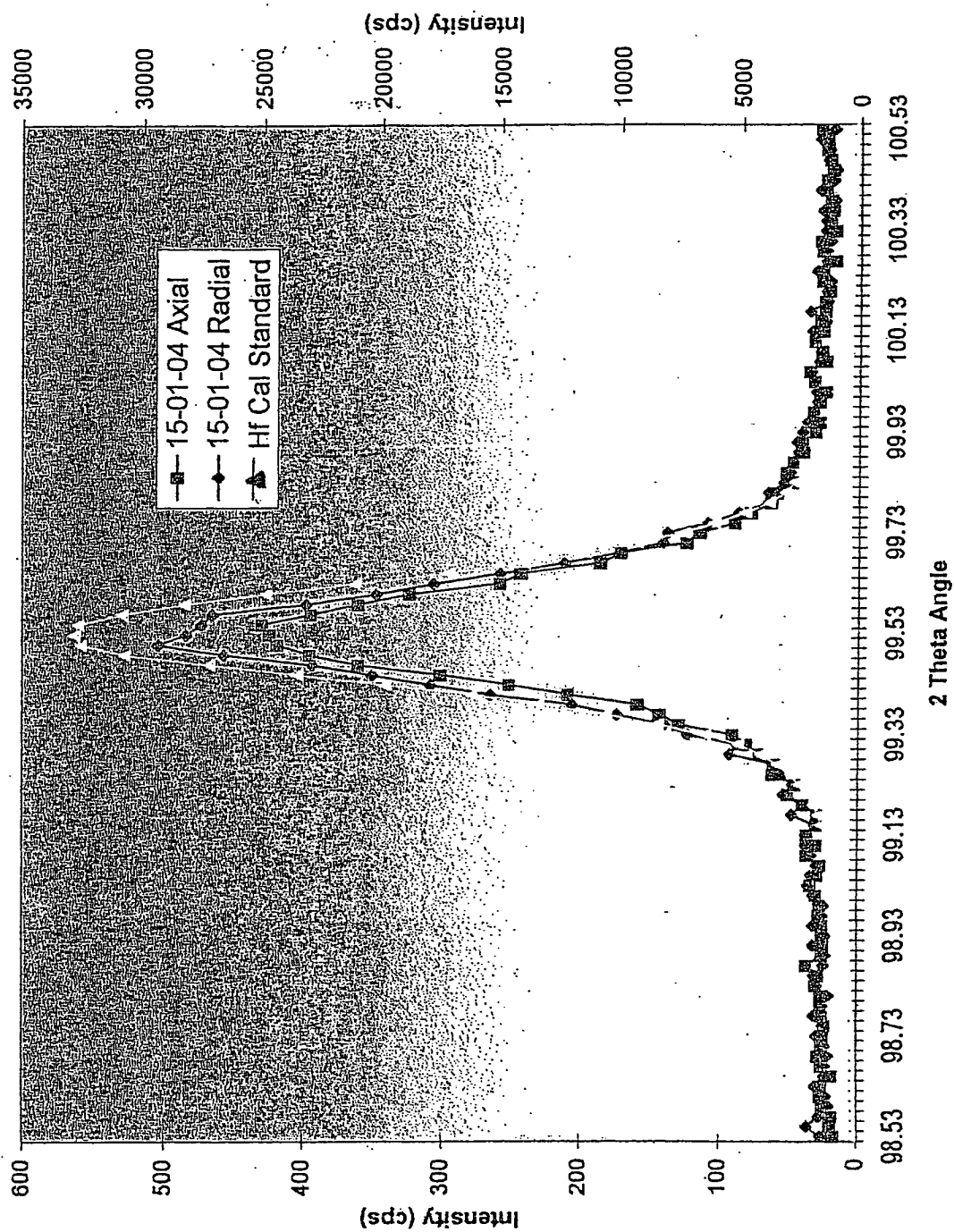


FIG. 59



# XRF Scans for Sulfur (Ge111/FPC) 15-01-04 Ni/Hf/W/Ta Ingot

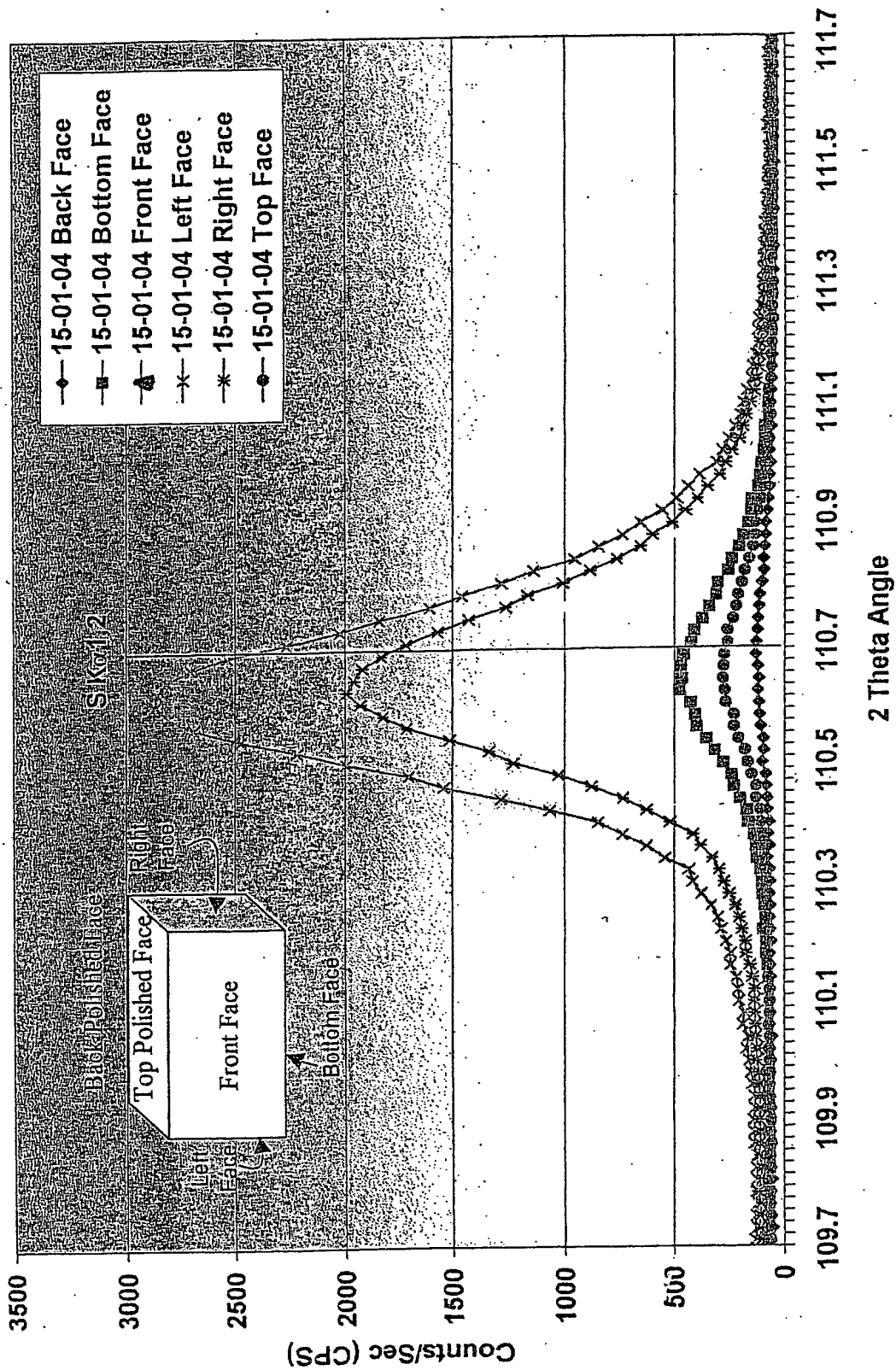


FIG. 60

15-01-04 Ni- Axial and Radial vs Ni Cal Standard (LiF220/FPC)

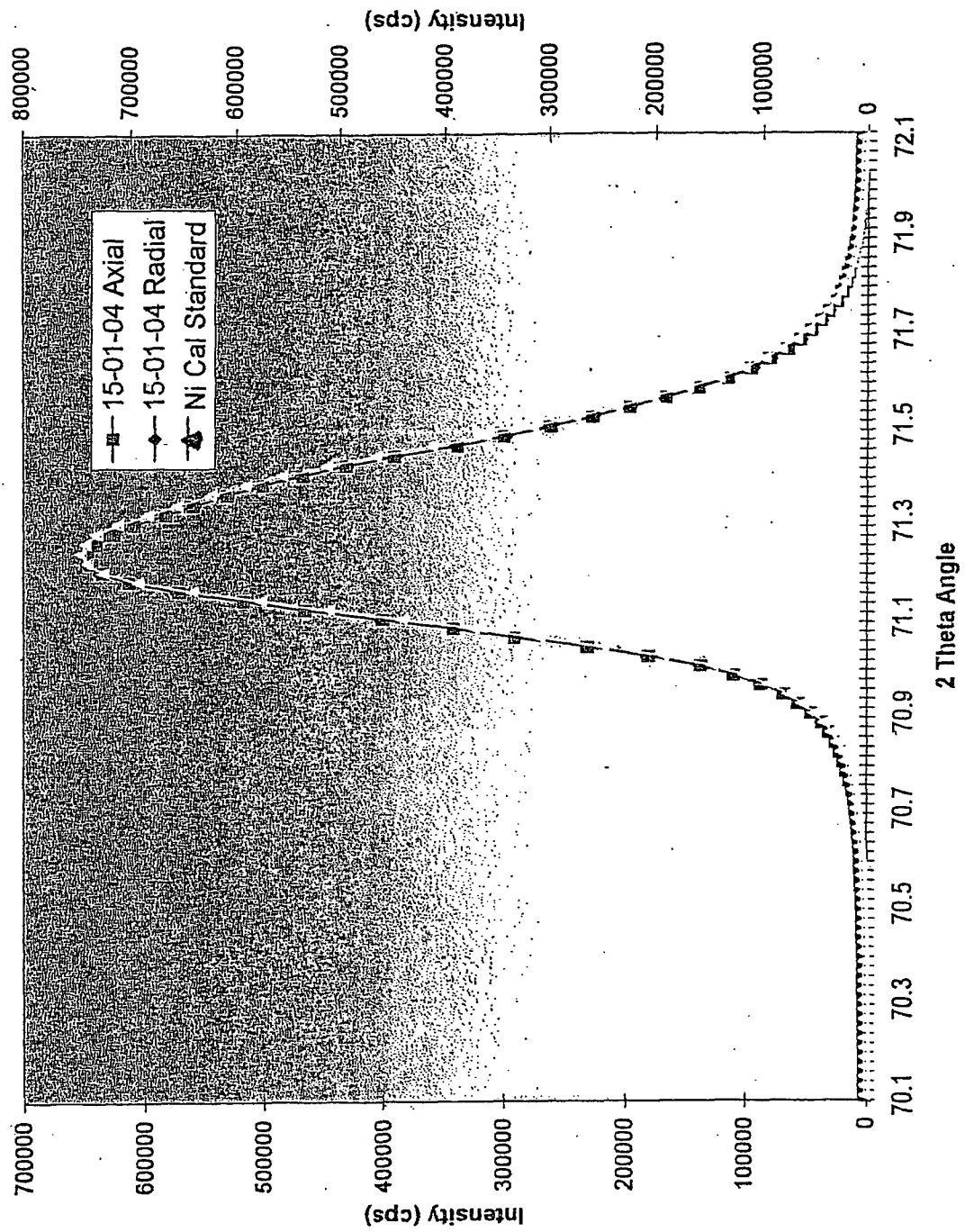
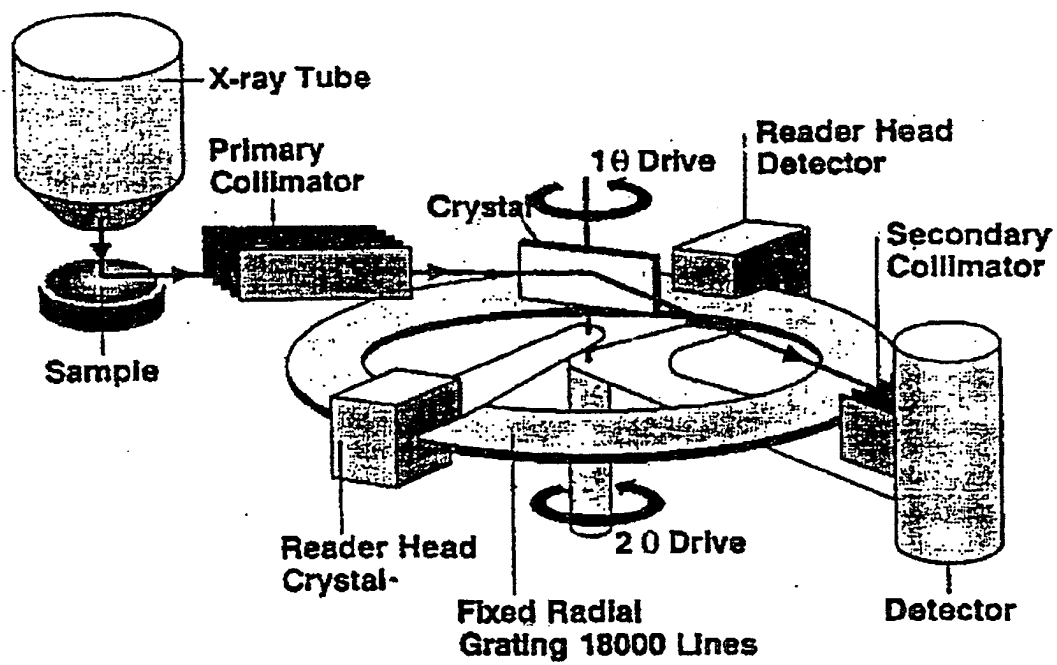


FIG. 61



Schematic layout of ARL 8410 sequential XRF.

FIG. 62